MAXIMUM POWER GAMING

atomic

EDHEAD

A bigger world...

Okay, so yeah, there's some great stuff in the magazine, yadda yadda yadda.

But, today (and whenever else you read this, assuming you re-read my column – which would be kinda awesome), I want to talk about some other parts of the big wide Atomic world.

First up, our website. It's getting pretty real at the moment, as we're putting more resources into delivering news, features and reviews first online, from a pretty solid team of freelancers and in-house writers. In fact, I don't think it's ever been as active; if you've not checked it out in a while, I'd recommend giving it a look.

We're still very active on Facebook of course, and on Google+, but we're also taking more time to make sure our Twitter feed is more than just a feed of the stories from the site. I'm on top the feed all day, so if you want to chat, or see what we're up to in the office, give it a look-see too.

And there's always our forums to keep an eye on. They're a hotbed of cool stuff, from amazing charity drives (see our Post of the Month in a few pages) to intense gaming action and great tech advice. In fact, if you end up becoming a part of our community, you may well make it into the news yourself, like our super-keen F1 Racing crew did last month!

So it's worth remembering that there's a lot more to Atomic than just the hardcopy in your hands. IF you've never explored it all before, you really don't know what you're missing out on. Come on... see you online!

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Google+: +Atomic

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COOLER MASTER

20th ANNIVERSARY SINCE 1992

Cooler Master APAC facebook

HAF XM

BONUS 200mm FANS x 3 inside

Latch on side panel for easy removal
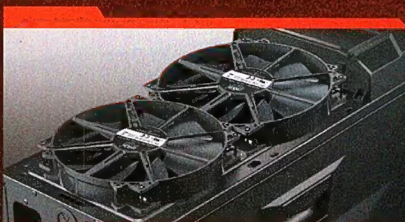
Dual 200mm fan support (one is Bouns given)

Top compartment design and Rich I/O Panel with Two USB3.0 & LED FAN Control

MID TOWER CHASSIS - HAF XM
EVOLUTIONARY MID TOWER FOR ENTHUSIASTS

The HAF XM has all the features of the HAF X full-tower in a mid-tower size. The HAF XM supports up to four 200mm fans and a 140mm rear exhaust fan to cool high-end components, such as the AMD Radeon HD 7970 and the NVIDIA GTX 580. You can add up to 9 HDDs and 8+1 expansion slots for 3-Way SLI / CF. A rich front I / O panel offers you access to two super speed USB 3.0 ports, two USB 2.0 ports, audio in and out, and even a FAN LED control. The modder-favorite PSU wire management cover keeps the inside of your computer clean and clutter free. A latched handle side panel allows you easy access to the insides of the XM.

www.coolermaster.com.au

Cryptic accounts compromised... in 2010!

Another MMO publisher has had a security breach, but the big news is it took two years for Cryptic Studios to notice!

You guys have heard the phrase, shutting the barn door after the horse has bolted? Well, in the case of an security announcement that Cryptic Studios sent out to subscribers this morning, the horse has not so much bolted, but rather...

It's dead already.

Cryptic's email was sent out on the 26th of April, and states "As a result of routine security checks and upgrades, we have discovered that certain of your account information, including your password, may have been accessed by an unauthorized party. For your security, we've reset the password on your account. You can recover your password via the "forgot password" link on the official Star Trek Online or Champions Online web sites."

However, when follow the link to 'full details' on the breach, you discover that "The unauthorized access occurred in December 2010, and evidence of this has just been uncovered due to increased security analysis."

So, yes, you might want to change any other accounts, gaming or whatever, that shares the passwords used for the two affected Cryptic

Games, but, you might also want to look back aways to see if anything untoward has happened.

Cryptic has not found any evidence that anything beyond log-in details have been compromised; no financial data has been breached, to its knowledge. For the full details, check this site: **http://www.crypticstudios. com/securitynotice**

Smartphones to exceed Xbox 360 level graphics next year

If NVIDIA's slides can be trusted, our phones will be graphics powerhouses really soon.

In the past people have speculated that Microsoft would release a portable Xbox to compete with the PSP and 3DS. These dreams of have yet to materialise, but now they don't have to, with claims that the next generation of Tegra (and presumably other) SoCs will match and exceed Xbox level GPU performance.

The slide above shows NVIDIA's projections. The dotted line is the current trend for console, PC and mobile markets, and the solid line is estimated theoretical performance.

Portable gaming has become a large aspect of smartphone use, with games such as Angry Birds and Temple Run taking the crown. On the Android side, many people emulate consoles to vastly improve the range of quality titles, and Sony is expected to extend their Playstation Suite to other Android based handset manufacturers.

It's amazing that phones have caught up to consoles, and will be at worst one generation behind come the next Xbox in a couple of years. Naturally there are critics who aren't impressed with the fast growth of mobile graphics performance because of the obligatory 'PC is better', to which I quote Louis C.K, "everything is amazing... and nobody is happy".

Graphics Performance

DIABLO III

15.⊕5.12

Atomic mobile site now live!

We're hitting the road with our brand new mobile edition of Atomic - it's your favourite site, optimised for your favourite phone. Win!

As you may have noticed, Atomic's online presence has been a little... supercharged of late. We're now posting more stories, by more writers, than ever before. And we're hoping things are only going to get bigger and better from here on in.

In fact, Atomic's recently made it into Nielsen's Top 20 listing of Australian tech sites - how's that?!

Now, since we've got so much more content happening, and we're hoping that more and more people will look to the site as part of their essential browsing regimen, it occured to us we were missing

something. So our dev team got their big brains together, and I am now proud to say that Atomic has a shiny new mobile edition (**http://mobile.atomicmpc.com.au/**), optimised for smartphone access no matter where you are.

Think of it - my ramblings on the train! Nathan's explorations of gaming while you're walking to the shops! Accessing Vito... well, let's not access Vito too much. He does get tired easily.

But you get the picture. Atomic, wherever you want it.

Made of win.

STALKER 2 is dead – but long live Survarium!

So much for that – the GSC team has pretty much disbanded and cancelled STALKER 2. But fear not, they're still working on something suitably bleak!

It's always a bad move to get too invested in the exciting news of newly announced games, and right now that's something folks that were looking forward to STALKER 2 must be feeling.

Because, sadly, the game is no more.

It appears the whole project's been on shaky ground for some time, according to a slew of recent posts on the Official STALKER Facebook page. There's been licensing hassles, not to mention the minor issue of most of the GSC team working for no pay for the last few months.

But don't be too sad, because out of the ashes comes a new development house, and a new game!

"The concept of Survarium is a next evolution step for the idea of S.T.A.L.K.E.R. we've been

working on for the last ten years. – said Project Lead Ruslan Didenko. – Survarium will go way further forcing mankind to fight for survival not only within the closed area of Chernobyl zone, but also far beyond.

Technology versus nature, rational versus mystical. Such a confrontation enables us to take a new look at the current happenings in our world, - said Aleksey Sytianov, Lead Game Designer of the project. – Survarium will offer players an atmospheric world of civilization crash, filled with factions and loners, stalkers and hunters surviving in a wild anomalous environment."

Sounds fascinating, so we'll be watching this space very closely.
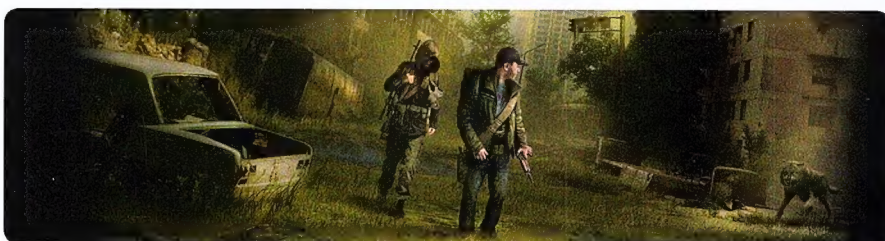
Hawken to get a post-launch graphic novel prequel

The other free-to-play mecha game we're all looking forward to will be getting the graphic novel treatment, plus maps, tips and more!
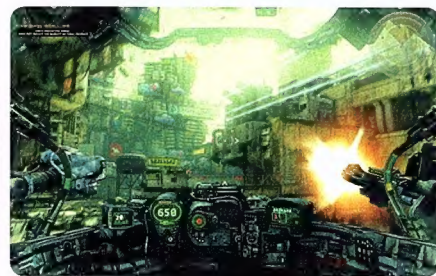
The back half of the year is going to be great for fans of mecha-based gaming. Not only are there two Mechwarrior games comingon the horizon, but we also have Hawken on the horizon, another free-to-play title full of leaping mecha set on a post-apocalyptic colony world.

The game's coming out on the curious date of 12/12/12, but early next year it'll be followed by a prequel - in comic form.

The comic - also to be called HAWKEN - is packed with talent. It tells the tale of the planet's colonisation, industrilisation, and subsequent collapse and battle for resources, over a period of three decades. Each time period will also feature a different artist.

Artists include Federico Dallocchio (Starcraft, Modern Warfare 2: Ghost, Suicide Squad), Nathan Fox (DMZ, The Haunt), Stefano Gaudiano (Daredevil, Amazing Spiderman), Michael Gaydos (Alias, True Blood), Bagus Hutomo (Shrapnel, Heavy Metal), Christopher Moeller (Iron Empires, JLA: League of One), Moritat (Elephantmen, Transmetropolitan), Alex Sanchez (Star Wars: The Old Republic, JSA Classified), Brian Thies (Winter Soldier, Dark Tower), Greg Tocchini (Last Days of American Crime, X-Force), and Francisco Ruiz Velasco (Inhumans, conceptual artist on Hellboy 2, The Hobbit, and Pacific Rim).

Also in the graphic novel, being released in March 2013, will be profiles, maps, stats, strategies and even some keys to unlocking bonuses and in-game features. For more details on the comic, being published by Archaia, check out its site (**www.archaia.com**). For more details on the game itself, check out its official site (**www.playhawken.com**).

MODIFICATION

With Ashton "Two mods are better than one" Mills.

Cinematic Mod 11

Game   Half Life 2
URL   www.atomicmpc.com.au/137_HL2_Cinematic11

Fakefactory's Cinematic Mod is one of the largest across development time, data size and system requirements. Not including the necessity of Half Life 2 and the subsequent Episode 1 and Episode 2, themselves totalling around 13GB, Cinematic Mod needs 30GB of disk space all to itself once installed. *30GB*. This is also why we recommend you grab the torrents to download the mod and its tiny (*cough*) 2GB patch.

A chunk of your SSD isn't the only necessity – 64-bit Windows, at least 4GB RAM, and a GPU with preferably 1.5GB VRAM or more is also required (the mod has been known to peak at 1.7GB – see this month's Technica Obscura!).

So what does all this highly demanding goodness bring?

We've previously covered the Cinematic Mod but it has since evolved to yet another milestone, adding to the already impressive base of new higher-poly models, high-res textures, dynamic shadows, real-time reflections, completely new soundtrack, and multicore support.

The new Cinematic Mod 11 adds enhanced particle effects for explosions and weapons, a new bloom effect engine with a variety of presets, bug fixes for Value errors in maps, new models for objects previously represented by

FAKEFACTORY CINEMATIC MOD V11
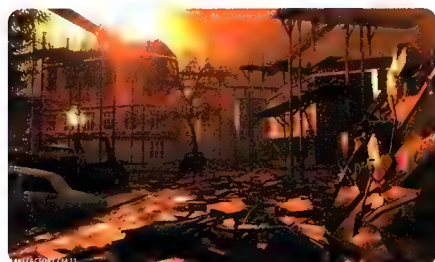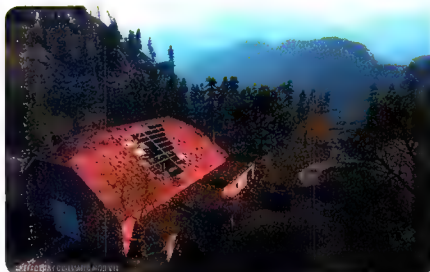
flat textures (such as window ledges), new Alyx models, updated weapon models and sound effects, and finally all maps in the game have been re-compiled with the latest version of the Source engine.

CM11 is the best way to play HL2, whether it's for a first time (is there anyone out there who hasn't finished it?) or if you feel – like I do frequently – that it's time to revisit this classic on a beefier machine and larger monitor (or

Surround for those lucky ones).

Worth noting: launch the mod from the shortcuts it provides, not through Steam (the shortcuts use their own launcher for adding heapsize tweaks among other things), and by default many of the advanced features are off – so as not to melt your humble PC if it's not quite up to the task. If you have a beast box, run the Configurator to enable all the bells and whistles.

Stalker Shaders MAX

Game Stalker: Shadow of Chernobyl
URL   www.atomicmpc.com.au/137_Stalker_Shaders

Off

On
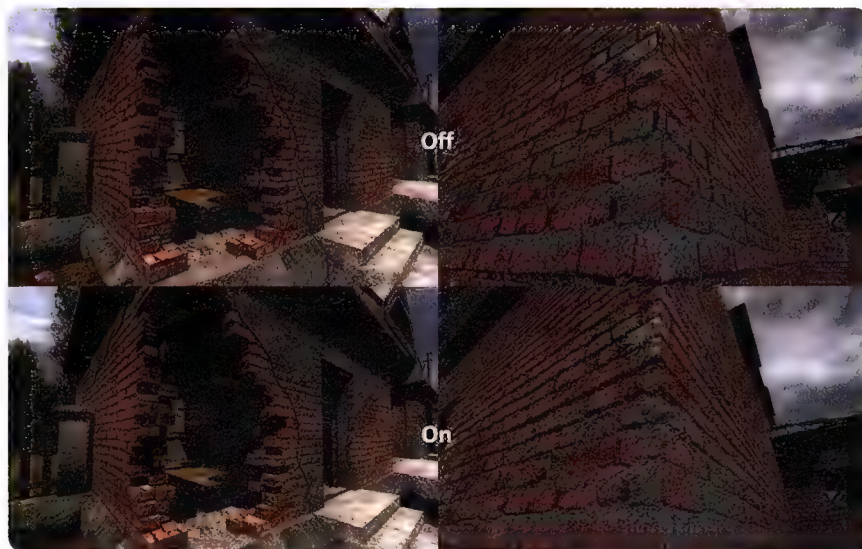
You know a mod's good when the authors capitalise **MAX** just so you how maxxed it must really be. And when it comes to a no-nonsense post-apocalyptic Russian-born kick-ass game such as Stalker, it's best not to mess about.

Stalker also happens to be quite moddable. We've seen interface mods, faction mods, new weapons and graphics – but what about some of the underlying effects through shaders? The heart of Stalker is atmosphere, after all, and the engine's graphics are huge part of that.

While there have been a variety of shader mods in the past (including Float32 which didn't add any new visuals, but did dramatically accelerate the performance of Stalker's shaders for an FPS boost), Stalker Shaders MAX aims to include all the best shader mods into one, and then optimise them for additional performance to boot.

Some of the new and improved effects include parallax occlusion mapping, SSAO, depth of field, sun shafts, and motion blur, in addition to improved shadow map resolutions
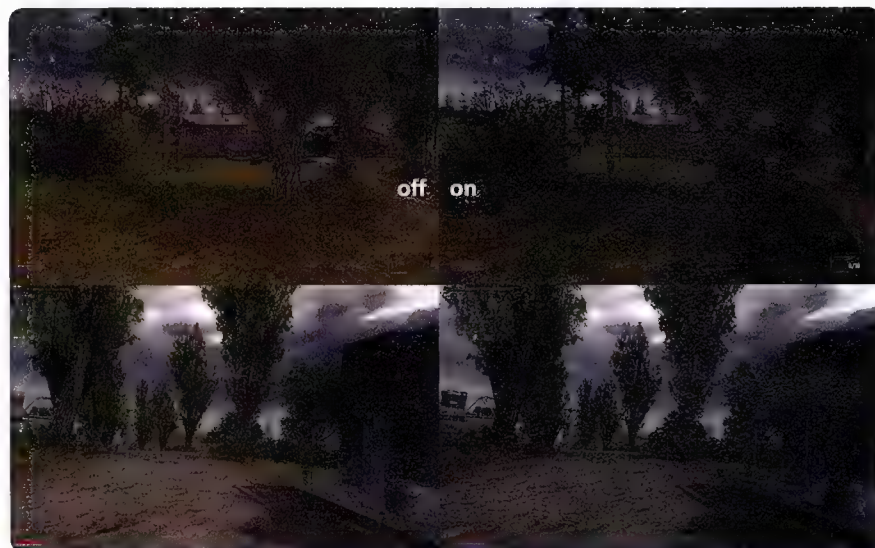
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off on

and the venerable Float32.

But just to take it to the max, Stalker Shaders MAX claims to add all these goodies and return to you a framerate faster than a vanilla install. What's not to love?

So if you've got a copy of Stalker: Shadow of Chernobyl lying around, or you've seen it in the bargain bin, do yourself a favour and play this classic with Stalker Shaders MAX and some other essential mods (like the Stalker Weather Overhaul and various texture packs). An old game it may be, but it can certainly bat with the best with the right mods installed.

MODIFICATION
Wing Commander Saga

Game **Freespace 2**
URL **wcsaga.com**

I f you remember a time when PC sound was mostly bleeps from an internal speaker and joysticks, for PCs were the hot new thing, then you'll know the name of Chris Roberts and the Wing Commander series of games.

Set in a universe where mankind is fighting for its survival versus a superior enemy called the Kilrathi – essentially a big cat-race with sharp, pointy teeth [/python] – it was one of the first space flight-sims to gain massive traction for the PC. So much so, in fact, that later instalments featured Hollywood quality movie cut-scenes with actors like Mark Hamill (Star Wars) and Malcolm McDowell (everything from A Clockwork Orange to Star Trek and The Book of Eli), as well as spawning spin-offs like Privateer, itself becoming one of the best-games-of-all-time along with the Wing Commander franchise (which is otherwise to say, Chris Roberts is a gaming god). At the turn of the century, the popularity of the series even spawned a Wing Commander film – as in, going to a cinema to watch it. This was in fact one of the pioneering game-to-film adaptions ever made – though it didn't break even at the box office. Gamers were probably weighing up the value of going *outside* to experience Wing Commander when they were warm and comfy in their gaming den.

And, if you *haven't* heard of Wing Commander, there is a perfect corollary for it: substitute Kilrathi for Cylons and the recent Battlestar Galactica TV show is Wing Commander to a tee. Humanity's survival, fighter-pilot culture, and stunning dog-fights all around.

Which is why Wing Commander Saga – a

Wing Commander Saga isn't just a mod; it includes a full game engine as well, and is free to boot!
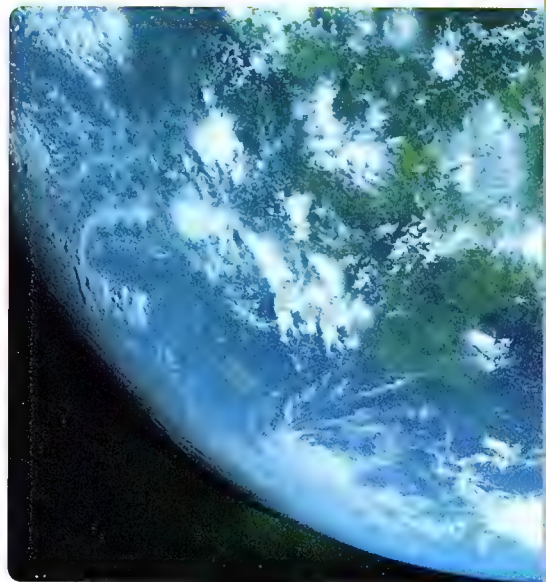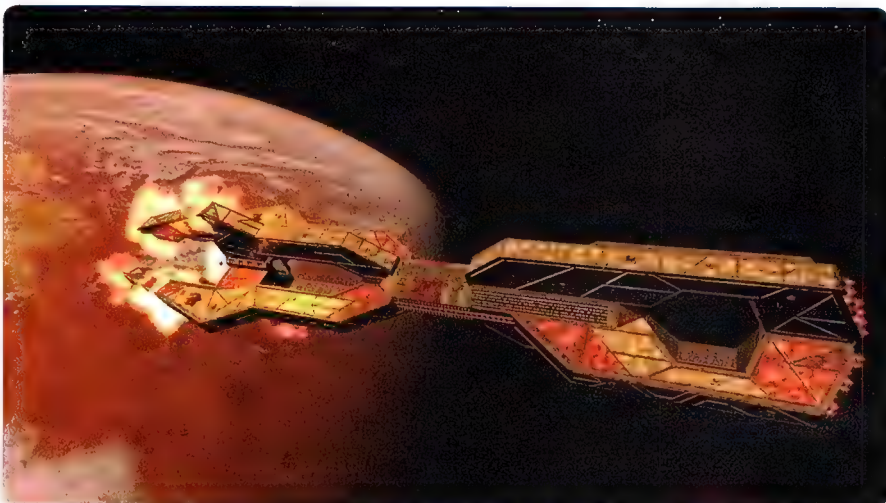
re-invention of Wing Commander using the Freespace 2 engine – is not only one of the most anticipated mods of all time, it's also a remarkable piece of work. With the open-sourcing of the Freespace 2 engine a decade ago, it has allowed modders to build and enhance the engine and to create entirely new games: Wing Commander Saga isn't just a mod; it includes a full game engine as well, and is free to boot!

While still dated somewhat compared to today's graphics, Wing Commander Saga is still leaps and bounds ahead of what the original games were like – these used sprites to represent ships, and to give you an idea of just how far we've come, the original Wing Commander series ran on DOS and required just *8MB* of memory and *11MB* of disk space. Kind of makes that 30GB Cinematic Mod install (see previous page) seem gigantic by comparison. Wing Commander Saga itself weighs in at 7GB complete, and sports over 60 different voice actors, an hour of pre-rendered cut-scenes, and some 55 missions spread across a new, lore-centric story line set in the Wing Commander universe. In addition to re-imagined Wing Commander ship models, high-res textures, and features like carrier landings and epic capital ship fleet battles not possible in the original games.

If you remember or are a fan of the classic series this is a must-have to download and play. If you're not familiar with the series but love Battlestar Galactica, this is also a must-have to download and play. In fact, everyone should be grabbing it. Get downloading and playing!

And after you've finished playing it, you can mod it too with your own missions using the same tools the talented team at wcsaga.com used.

Ah modding, what's not to like?

GEARBOX
All the coolest gadgets & gear.

LG Nano Cinema 3D Smart TV

Price: $4599 Website: www.lg.com.au

To really enjoy your games and movies, you need a good TV. Projectors are fine if you have the ceiling and wall space, but for the best and easiest experience, just plonk down the cash for a 55-inch screen and call it done. LG wasn't happy with making just any old screen though: the LM9600 that launches May this year features a tiny 4mm bezel that makes it look like there's no edge to the unit at all!

It's a LED-backlit passive 3D TV that's internet-capable, with a special 3D mode that allows full-screen 2D gaming for two players; no screen-peeking allowed. Only problem is the astronomical price, and with OLED and 4K screens threatening to show up in the coming years, it may be a tough decision to invest. But if you do you're likely to have a few new best friends show up out of the woodwork.

GEAR4 Angry Birds Speakers

Price: $120+

Website: www.atomicmpc.com.au/137_Angry_Speakers

When any press release begins with puns, you know the product it's announcing isn't going to be very serious. Much less so when the only quote from the manufacturer's CEO includes bird noises!

But there's no denying the popularity of everyone's favourite bird game, which has consistently broken download records and totalled more hours of playtime than most PC titles seem to manage. And if you're so attached to the game that every object you own must remind you of it, your options cover buying stickers; or buying these ridiculous speakers. They're $120 a pop for the Red Bird or $150 for the Green Helmet Pig, both with a 3.5mm audio jack and iPod connector, or $150 for the Black Bird with an iPad dock.

Side note: play Angry Birds through these speakers while wearing a matching t-shirt and cap, on a bed surrounded by plushy birds. Rock back and forth as you slingshot your life away.

EVERCOOL YOHO Laptop Table

Price: TBA
Website: www.atomicmpc.com.au/137_YOHO

If you've ever tried using a gaming laptop on a bed, you'll soon realise that the sheets have a proclivity to block your intake fan. Blocked fan equals little airflow; which results in hot laptop. The solution we usually implement is to chuck the laptop on a book or box, but if you felt like being a bit fancier, the YOHO isn't a bad option.

It's a table with adjustable height from 235-315mm, angle-adjustable from 0-30°, and if you buy the NT-111 model over the NT-112, it even comes with an 80mm USB fan to give you some more airflow. It may look a bit wanky, but usability (which is most important with a product like this) seems just fine.

Plus it makes us think of pirates. DRINK UP ME HEARTIES!

iFrogz 'Ear Pollution' CS40

Price: from $40
Website: www.atomicmpc.com. au/137_iFrogz

Aside from having a silly name, the iFrogz Ear Pollution CS40 headphones are notable for having a multitude of colour options; they're available in Black, White, Grey, Red, Green, Blue, Yellow, Pink and likely more. While availability of each colour manufactured is not known for Australia, distributor Audion is bringing the brand in at a decent price of $40 per headphone.

What this nets you is a slick-looking pair of headphones with 40mm drivers, though the promotional material on the site makes it very clear that these are about looks first – not sound quality. Still, paired with a range of iFrogz phone cases and other earbuds coming to the market they're certainly worth a look for the fashion-conscious out there!
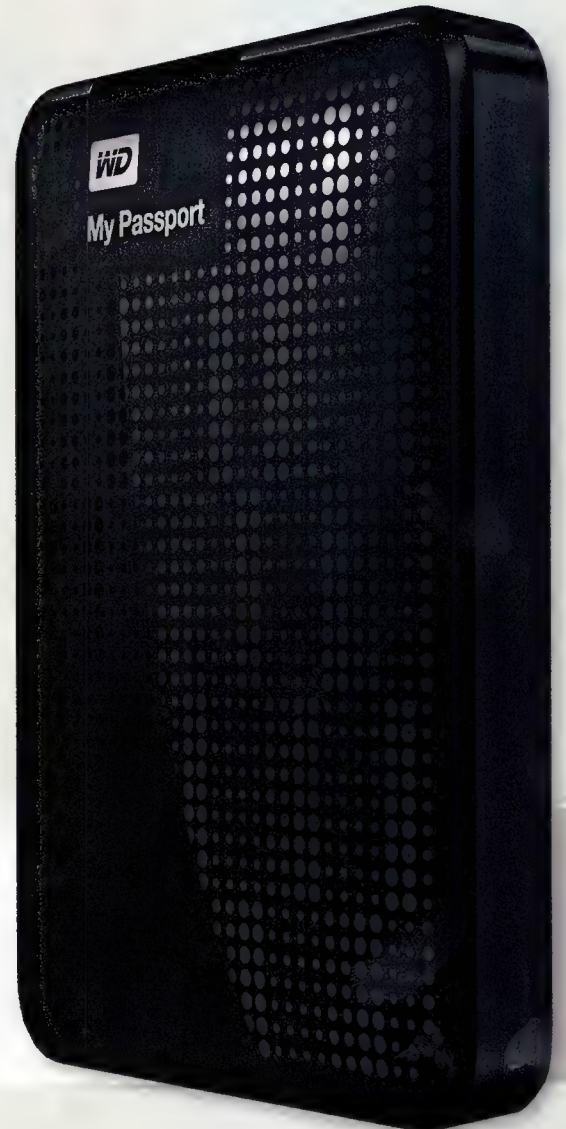
WD My Passport 2TB

Price: RRP $299 **Website:** www.atomicmpc.com.au/137_Passport_2TB

There are times when you need to take data with you. Sometimes it's an awful lot of data – and sometimes you don't want to bother with bulky power bricks. The solution is a 2.5in hard drive, perfect for giving more storage space to your laptop or netbook. But alack, alas, their storage capacity is not as high as the desktop models!

No longer, says WD, cramming 2TB into a USB3-powered 2.5in chassis that supports on-the-fly drive encryption and automatic backup software. As per the standard it's backwards-compatible with USB2, but you'll get the most out of it with the faster bus. At just shy of $300, it's potentially a great option.

Virtually (Almost) There

Jake Carroll gives a heads-up determination on the state of Augmented Reality.

There are many subjects we could have covered this month in X-Ray, but we thought to keep things current and topical we'd drop in on Augmented Reality (AR). With the hype and buzz around the Google X Lab's latest 'Google Glasses' device, we felt it appropriate to peel back the layers of Augmented Reality with a very sharp knife and take a look under the fur.

In the origins of computer science, the definition of Augmented Reality was far stricter than the usage currently being thrown about in mainstream media. The term is used very loosely, describing everything from the overlay that your Android device draws when you hold it up to a sign it recognises, to in-car navigation systems that have in-depth knowledge about their surroundings that allows them to plot detailed information about the hotels and various eateries on your maps, and further to strange little floating games using real-life surfaces as the backdrop to paint 3D rendered graphics on 3D axis. However, these are all apps, mere fun and games. In true computer science, these implementations are actually closer to a term known as **mediated reality (MR)**.

Many of the constructs found in products and technology demos deemed AR are in fact MR. MR refers to the ability to add, subtract or somehow modify a person's view of reality via the use of technology. This technology may come in the form of wearable computing, optical projection glasses, smartphones or otherwise.

Typically, it is a person's **visual perception of reality** that is mediated in some way. That is to say, auditory cues might exist, but for the most part our vision is what shapes our perception of reality in physical space (or on a screen).

The concept of augmented reality and mediated reality were most likely coined by Professor Thomas Caudell, whilst working at Boeing in 1990. The term came up in efficiency-creation tools whereby Caudell found a means to give avionics engineers a head-mounted set of glasses they could use to overlay schematics and wires whilst working on aircraft assemblies.

Money motivates

There is a need in industry and manufacturing for reliable, replicable processes. The capacity to analyse and quantify cost/benefit trade-offs for various infrastructure components within

The Current BMW 7 series HUD (Head Up Display) transplants speed, road information, maps, arrow-based guidance and pedestrian warnings in front of the driver's eyes in a form of mediated reality.

The Google X Lab glasses prototype from Project Glass.

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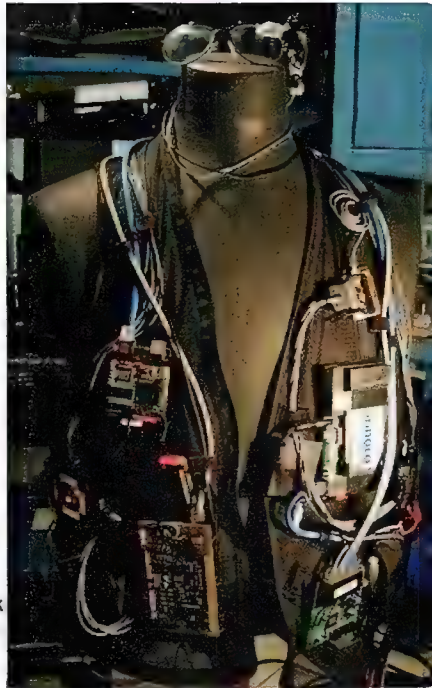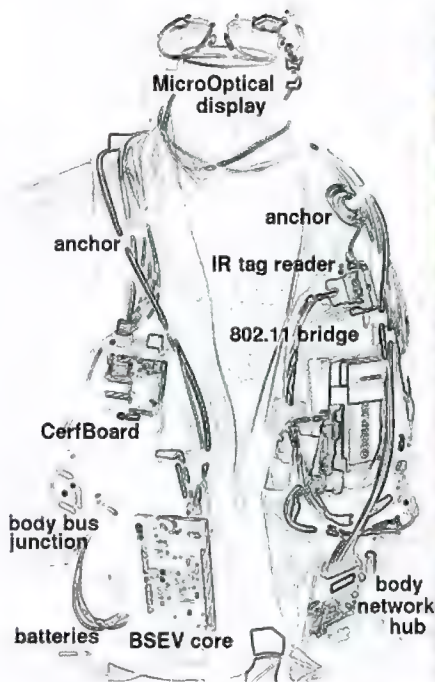
The MIT wearable computing prototype from the early 1990s.

This technology may come in the form of wearable computing, optical projection glasses, smartphones or otherwise.

manufacturing and service delivery **must** exist. Robotic automation was the humble beginning of this efficiency drive.

The business/industrial standpoint and motivation for most AR/VR/MR projects is that it allows seamless digitisation and application of processes that enhance the real environment based upon approved visual prototypes. Distilled: this allows engineers and workers on the ground to build identical or unique parts using an overlaid design, with a consistent result each time. Areas of persistent repair or component failure, and places where time and errors are getting in the way of efficient production (and therefore money) are ideal targets for such technologies to improve workflows.

These design tools aren't just in the hands of engineers or technologists, however. Companies

such as Bosch have commoditised such simple AR methods and have put them into an application for the iPad, known as Bosch 3D Studio.

www.atomicmpc.com.au/XRay_Bosch

The resource boom

At the bigger end of town, AR is being proposed and even implemented for mechanised, robotic-assisted long-wall face mining. Through a combination of true VR and elements of AR, this will bring the long-wall mine environment "to" the miner, sitting back in an office or mine-site on the surface, away from the depths of the mine itself. The long-wall face could be scaled and viewed from a variety of angles and perspectives, allowing the 'driver' of the remote tools to best understand where to drill or dig. The powerful combination of AR and VR does a couple of

Apps for the masses

We've looked at the serious applications of AR. Now we'll turn to some fun applications and the dinky things people will buy millions of times over from the iOS/Android stores.

Applications that give a sense of higher purpose or 'deep technology' (despite being toys) are a current technology trend. One such example is 'Spyglass'.

Tools such as 'ZipRealty' allow you to swing your tablet device around the neighbourhood and as it passes over houses in view of the front mounted camera, will bring up the value, costs, selling prices, address and similar properties on the market for you.

Other more practical applications are real-time translation tools, where one might hold their phone up to a sign in a foreign language and the sign will then be translated on screen to the language of the users choice. Applications such as the iDevice-only 'Word Lens' are proving very popular for travellers.

www.atomicmpc.com.au/137_XRay_Word_Lens

ZipRealty. For when you've become sick of those annoying real estate agents hounding you. Or you're just plain nosy.

interesting things, because it not only provides the driver or mine operator to 'see' the wall face without being in such a dangerous environment, but it further presents analytical data as an overlay atop the long-wall face, such as depth information where a mineral seam might be running, and structural weak points.

Not only does this technology improve efficiencies in mine sites and save resources because operators know where to drill, saving energy, but it also prevents human lives being put in dangers underground such as gas explosions, dangerous cave-in scenarios and other environmental hazards.

Saving lives

The medical imaging industry is benefiting from AR as well. Unfortunately, the depiction of AR in television programs such as 'House' is romanticised and often a little way from the truth in elegance and simplicity. The truth behind AR in medical imaging and surgical procedures is that though real-time workflows are occurring and
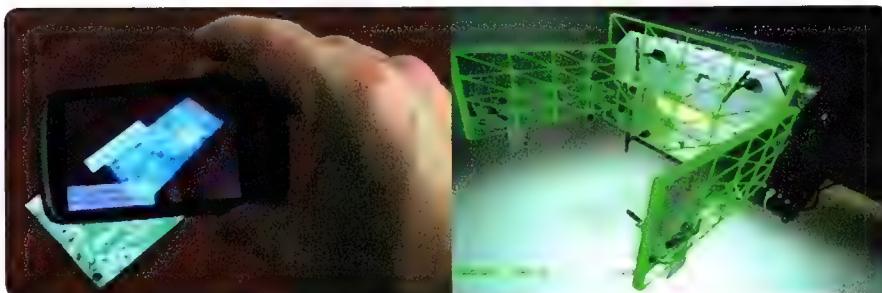
The Boeing AR environment being used in extrapolation and integrated circuit diagrams of hardware components used in avionics technology.

A sketch of folded and unfolded tube (left) and several parts of a bifurcated prosthesis. This is the construct that forms part of a complex operation to pry open portions of a vein or artery to allow circulation/appropriate blood flow, preventing stroke, aneurisms and eventually death.

Principle workflow for a stent simulation.

the average person's understanding of what AR is truly capable of. Google's latest Glasses campaign has drawn criticism from industry experts and academics alike for its 'almost there' and 'in the future, but now' perception and description of what their new product will do and the experience it might give an end user.

While a great deal of hype and controversy has been created as a result of Google's foray into AR, the mass-market remains unconvinced of just how useful it actually is. 'Use once' toys typify current generation consumer applications.

The critical analysis of the technology found in the academic press (Communications of the ACM, 2010/2011/2012) have repeated time and time again that the key to AR's success is a market build up and momentum, as with almost every product on the market in the consumer electronics space. Profiteering from AR is going to be difficult if there isn't market uptake and acceptance. It's suggested that the mainstreaming of the technology now also relies on the ability of companies to manufacture the equipment cheaply. With an estimated price tag of several thousand dollars per unit (technology analysts conjecture only), Google's Project Glass may not be within the reach of the mainstream consumer just wanting to have some fun at this point in time.

Several industry specialists, including Pranav Mistry from the MIT Media Lab unit and Blair McIntyre, director of Augmented Technology laboratories at Georgia Tech, have concluded that a true AR environment simply isn't possible with the Google model that uses such a small field of vision and a tiny screen off to one side of the eye. A question has been raised about the difference between AR and location-based notifications. The reason this question comes up is because, in Google's promotional video, the central character is often looking in the direction

innovations are being made, many procedures involve pre-processing and rendering 'behind the scenes' before any surgeries or diving-into-internal-organs-with-a-scalpel takes place.

With the use of highly advanced algorithms and significant research, the sketches and basic dimensionality of the stent and operation can be 'fitted' to a real human body via the use of AR in pre-op medical imaging.

It all comes together when full 3D views based upon modelling and near-field MRI (Magnetic Resonance Imaging) are thrown together, thus allowing the stent to be superimposed on a 3D view. Ultimately, this takes the guesswork out of an operation to an extent and patient outcomes are better.

Does the world want AR?

On the outset, AR hasn't been taken too seriously within the mass market. Gimmicks, toys, dongles, cheap apps and fun things you'll see on a television commercial are the extent

Home	Speichern	Gerät plazieren.	Vollbild

Ändern

Weitere Produkte

Mitteilen

?

The Bosch augmented reality application. Designing your kitchen has never been so easy or fashionable. We hope you can read German.

Arguably, AR has been used for long enough in scientific, military and industrial applications to demonstrate positive outcomes.

of notifications and messages popping up. Locational awareness and notifications based upon this are not AR.

Does AR actually make us more efficient?

We are left questioning if AR actually does make us more efficient or better at what we're trying to achieve at a point in time. At this stage, the experts (such as those quoted above) suggest that it has the potential to do so, but we aren't there yet. There are still too many barriers and economic pitfalls to navigate. Arguably, AR has been used for long enough in scientific, military and industrial applications to demonstrate positive outcomes, but this is only one market or section of a market.

The vast majority of futurists, technologists, computer science researchers and engineers agree that the core thing missing in AR working well, fluidly and as an extension of our everyday electronic devices or personal assistive devices is infrastructure. A future article of X-Ray will deal with a concept known as the Age of Complexity, which is touched on here.

Our mobile phones, laptops, communication mechanisms and the digital world we inhabit are all intertwined. Complexity abounds because of the very definition of each interaction. Every Twitter feed, every Facebook post and each Google image search could be related in

some small or significant way. Each of these interactions produces some data. That data is growing at such a significant and alarming rate that it's hard to manage, analyse and make sense of. Often called unstructured data, it's the bugbear of any programmer, engineer or platform developer attempting to provide useful information out of a tidal wave of other data.

How does this relate to augmented reality?

The nature of AR is that we'll have the ability to overlay images, sounds, information, in depth perspectives and video all in real time as we are viewing things in real life. To do that with any form of appreciable efficiency or timeliness, we're going to need a few significant things:

1. We'll need plenty of communications bandwidth. Consider how much bandwidth we would consume with audio/video conferencing and text searches just by staring at a painting in a museum.
2. We'll need plenty of intelligence in whatever processing device we are wearing, in the form of a head-mounted display. It'll need to be able to render 3D topography, understand surfaces, textures, process visual information, track the position of our retina, process audio and video and possibly even decode/encode visual information that requires the grunt of 'deferred processing' in cloud-based infrastructure.
3. We need integration and intelligence. From a purely scientific standpoint, the glimpse of AR that Google has shown us simply isn't possible currently because of the level of integration; whereby a user's device knows the weather is bad, then suggests taking the train, then inferences a route for us – and then suggests cool shops based on the user's interests along the way! This might be computationally possible, but to do it all in real-time purely from user-feedback or an inferential 'guess' is simply not possible in a tiny device sitting on your head over your eyes.

We've got a little way to go before AR touches our lives in the ubiquitous way that Google and others suggest it will in their grand visions. That's not a good enough reason to stop us dreaming though, right?

atomic

INPUTOUTPUT

Dan Rutter brings the answers to your questions like no-one else can.

I/O OF THE MONTH

Decrapulation 1

I I need the opposite of Ninite. Ninite makes it easy to install a long list of programs on a new PC, without having to download and install them individually.

I want a program that easily UNinstalls numerous programs, to get rid of trialware versions of Norton SystemClogger and McAfee Not-As-Good-As-Free Antivirus and so on from a new brand-name computer. I personally only have to put up with this garbage when I buy a new laptop, but everybody else in my family would still be buying Amstrad and Tandy desktops if they could. And whenever they bring home their latest device full of bundled-software joy, I'm the one that has to shovel out the crap.

Save me!

Bertoldo L.

O An answer to your prayers exists, and it would be worth downloading even if it did not have a particularly clever name: "PC Decrapifier" (**pcdecrapifier.com**).

There's no truly perfect one-button Windows shovelware destroyer, because

I/O OTM

WINS A THERMALTAKE CHALLENGER PRO KEYBOARD

some people actually *want* some of the built-in software, and it's often difficult to tell whether a given program is the full desirable version, or the time-limited but fully functional trialware version, or the crippled useless bundled version. But PC Decrapifier does make removal of all of the little pointy software fishbones a lot easier.

You don't have to use PC Decrapifier on a brand new PC, either. It can also be handy, and has an operation mode specifically for, removing crap that you've installed yourself over the years.

Decrapulation 2

I I want to reinstall Windows (7, Professional, x64) on my laptop, but without all of the ASUS garbage I spent time removing when it was new. But all I have to reinstall with is a recovery-image thing that will just give me the factory garbage again.

Is the retailer supposed to provide a proper install disc along with the genuine-Windows sticker? Can I get one for free from Microsoft or ASUS to use with my existing, legit, Windows key?

B. Nash

O As per the previous letter, you could just install with the recovery image/disc (which may, by the way, format the drive or otherwise zap all of your user data), and then make the bundled-software removal process easier with PC Decrapifier.

But you could also install a clean standard version of Win7. Just download a disk image, burn it to a DVD-R and reinstall from that.

You probably already knew you could do that, but you wanted a legal option. For some reason I find myself feeling vaguely disappointed to say that this actually *is*, or at least can be, legal.

You can download Win7 ISOs from Microsoft, you see. Well, actually from Digital River, but they're providing the downloads legally on Microsoft's behalf. The one real advantage of Microsoft's irritating "Genuine Advantage" Copy Control Crap is that the ISOs themselves become legitimately distributable, since an image of a legit Windows disc doesn't, by itself, help you pirate Windows.

Microsoft don't seem to have a download page of their own, but there's a neat list at **bit. ly/win7isos**.

You may even be able to do it without burning a DVD, if you've got a big enough USB drive. Microsoft's "USB/DVD download tool" lets you install from a flash drive instead: **bit.ly/ msusbtool**

PC Decrapifier - 2.2.8

Select Items
From the list below, select additional programs you would like to manually remove.

☐ NVIDIA Supersonic Sled demo		Help
☐ NVIDIA System Monitor	NVIDIA Corporation	Help
☐ NVIDIA System Update	NVIDIA Corporation	Help
☐ NVIDIA Update 1.7.11	NVIDIA Corporation	Help
☐ Oblivion mod manager 1.1.12	Timeslip	Help
☐ Overlord II	Codemasters	Help
☑ Paint.NET v3.5.5	dotPDN LLC	Help
☑ PC Inspector File Recovery		Help
☑ PDFCreator	Frank Heindörfer, Philip Chinery	Help
☑ pdfforge Toolbar v1.1.2	Spigot, Inc.	Help
☑ Picasa 3	Google, Inc.	Help
☑ Portal	Valve	Help
☑ Portal 2	Valve	Help
☑ Prototype(TM)	Activision	Help
☑ PunkBuster Services	Even Balance, Inc.	Help
☐ Q10 Editor		Help
☐ QuickTime	Apple Inc.	Help
☐ Rag Doll Kung Fu	Mark Healey	Help

Free for personal use only, others see:
www.pcdecrapifier.com

[< Back] [Next >] [Cancel]

I've decided I just don't like things that start with P.

Rectangular snow

I I was playing Skyrim on my Core i5, 3GB RAM, HD 6870, 64-bit Win7 PC, and suddenly got a weird graphics glitch – little grey squares all over the place. They move when I move, but apart from that they don't seem very well "attached" to anything.

See attached picture, with bonus invisible axe! (Is that in some way connected?!)

Hamish Uren

O The first thing I thought of when I saw the little squares was bad, or excessively overclocked, graphics memory. Little dancing dots are a classic symptom of that.

Those video RAM glitches show up as single pixels, though, and these grey squares are way bigger than that. The problem actually turns out to be the version 12.3 Radeon driver, in which turning on anti-aliasing in Skyrim's launcher options creates little squares in a variety of colours. Turning off anti-aliasing in the Skyrim launcher and turning it on, for Skyrim, in the Catalyst control centre software, should get you past the glitch without subjecting you to jaggy edges.

(By the time this magazine is published, there'll probably be a driver update that cures the problem entirely.)

The invisible axe isn't a hardware, or driver, problem. It's just one of the slight imperfections in Bethesda games that are evidence of their handcrafted nature.

This glitch was brought to you by The Makers Of "People Stuck In The Ground", "NCR Trooper Typing On Invisible Computer" and "Upside-Down Rifles"!

The touch of death

I Is it possible to disable a (Windows) laptop touchpad while you're typing? I just cannot prevent myself from palming the touchpad accidentally and moving the cursor somewhere else in the document, or out of the document altogether. It's less of a problem if I disable "tap to click", but I still move the cursor around randomly, and sometimes I press the buttons under the touchpad anyway. There has to be a better way!

Alexandra O'Doyle

O There are several different proprietary touchpad-config programs that come with different brands of laptop, but I don't think any of them let you do anything more flexible with the touchpad than just entirely disable and enable it from the system tray or maybe with a hotkey. This is not a good solution.

Try, instead, the inventively-named "Touchpad Blocker", **touchpad-blocker.com**. It disables the touchpad entirely for a configurable length of time after any key is pressed, so the touchpad will stay disabled while you're typing.

Silent and stationary

I Sometimes my Dell Inspiron N4110 laptop's fan starts running at full speed for some time. When the fan *stops* running, so does the whole laptop. Just hung, nothing happening, no disk activity, no errors.

Originally I turned it off after this happened and it was OK, for a while, when I turned it on again. But then one time I waited instead and discovered that after a few minutes, it comes good again by itself. Which is better than it just being broken I suppose, but still isn't making me happy.

This is probably going to cost money. That's fine. Just tell me what I need to replace. Please.

J. Terry

O What you most probably need to replace is the dust that is clogging up the fan. Once you get the dust out, finding exactly where it came from in order to replace it accurately may be somewhat challenging. But at least the laptop should be OK.

What's happening is, something's using a lot of CPU time for a while, and the fan's running up to maximum speed, but because of dust (or other obstructions, like if you've got the laptop resting on a blanket), maximum fan speed isn't enough to stop the CPU from overheating. Since it's a modern processor it can, in extremis, pause entirely until it cools off, rather than unrecoverably hang like an old CPU would. But when the CPU does that, the paused computer for some hardware reason or other makes the fan stop, so the CPU cools rather slowly.

The good news is that fishing out the dust will probably solve the problem. The bad news is that you probably can't just puff the dust out by blowing from outside, and will have to half-disassemble the laptop to get at the clog. Get the service manual from support.dell.com, and have at it.

To make this problem less likely to recur, try to find what it is that's using all that CPU time, and see whether it needs to be running at all. (The more the fan spins, the faster it'll inhale dust.)

My first guess would be antivirus software, but various other things can do it too. The standard Task Manager will probably show you the guilty process; download Process Explorer if you need more detail.

No config option should ever be called "Family Safety"

I The Windows 7 Control Panel always has me just staring at it for a while to try to figure out which friendly category the thing I'm trying to change fits into. This might be great for people who've never seen a control panel before, but damn it, I've been learning what the Windows Control Panel's meant to look like since 1995.

Vista had an option to restore the XP-type control panel, but Win7 does not. Is there something like a hidden registry option that'll switch it back? Can you fix this with the Win7 "God Mode"?

C. Sparkes

O Nope, you can't do that.

What you *can* do is just start typing what you want to find into the "Search Control Panel" box at the top right of the window, which will give you a dynamically created list of things that match. Actually, you can usually just type what you want into the "Search programs and files" box that used to be the "Run" box at the bottom of the Start menu.

"God Mode" is more correctly known as the Windows Master Control Panel shortcut, which you get to by making a folder with a lot of hexadecimal in its name which you should just copy from **bit.ly/windowsgodmode** rather than painstakingly type in from a magazine.

The result is a folder containing pretty much every configuration item, the thick end of 300 of them, which are blessedly both categorised and searchable. There's no way to make the God Mode window look much like the old Control Panel either, but you may still prefer it to the standard interface.

Headroom

Having trouble future-proofing? **Ashton Mills** sympathises.

Enough isn't ever enough. When you're shopping for gear, it's easy to say your chosen CPU, hard drive, or graphics card will last until your next upgrade sometime in the future. That it has all the beef you're looking for. And usually, especially if upgrading a whole system, you can expect it to kick the booty of every latest release for a year or two.

But then out comes that one really demanding game, and suddenly your golden-gilded graphics card of immense power is cowering in the corner, a fluffy bunny rabbit begging not to be eaten.

I have a pair of GTX580s, and my nemesis is Skyrim. What's that, you say? Skyrim should run like butter down a super-model's soft buttocks? Aye, it does. If I don't load it up with texture mods to really show off how great Bethesda's imagination can be.

The problem isn't the **power** behind the GTX580s, it's the VRAM. At 1.5GB of memory this is quite often enough. Although running at 2560x1600 on my Dell I'm more likely to hit a ceiling than on my trusty old 1920x1200 Samsung 275T. This difference in resolution is significant, for while the extra memory in framebuffer isn't huge, this isn't the only element factored in – add in triple buffering for stable vsync, and moderate AA and AF, and this can jump up a few hundred megs (to say nothing for those running Surround or Eyefininty with three monitors).

If you then enable features like SSAO (Screen Space Ambient Occlusion) like NVIDIA's latest drivers sport or the popular ENB modification for a variety of games – which also chew up more VRAM the higher resolution you use – then suddenly 1.5GB is being hit as a ceiling before even adding in texture overhaul mods.

I've been a bit of an NVIDIA fanboy for a number of years, mainly because Nvidia's Linux drivers are decent and a snap to install, but at the moment I'm wishing I had a 7970 with 3GB.

Now of course the GTX680 is out with a tempting 2GB of memory too, but while this sounds like a lot, I can't help but think it's not. For all I know my chosen mods, resolution, SSAO, AA and other features could well fill up more than an extra 512M. With RAM so cheap, even DDR5, there's no real reason why GPUs don't come with more memory by default (well, AMD is better here with its 3GB flagship cards). And yes the GTX580 eventually came out in a 3GB model, but long after everyone who was going to buy one already had the 1.5GB model.

Skyrim, of course, is only one example of a game that can push the limit now. There are quite a few others including Battlefield 3 and Crysis 2, and more are only going to come. It is perhaps a unique time when graphics cards no longer need to compete on performance, which is fast enough for most applications, but instead focus on VRAM.

Which leads me into to the up-and-coming 4GB GTX680s that should hit the market soon. Ostensibly marketed for the Surround crowd (oh I would love Surround, but bezels – you are evil), I think I could fill even this amount on a single screen with all the best texture mods. And if mods can do it, so can game developers.

(Many games are developed with lower-res textures when they plan to be ported to consoles, which have drastically limited VRAM, which is why we see things like the Crysis 2 HD texture pack.)

All of which is a long way of saying – NVIDIA and (less so) AMD: whatever you think is 'enough' RAM for the next release card, double it and slap that on. I know, that would appear to be counter-productive to the business model of selling as much product as you can, and for which performance-strapped gamers will happily upgrade to, but there's also something to be said for foresight and producing a product that engenders future brand loyalty.

Ashton still can't wait for the Memristor.
amills@atomicmpc.com.au

Plight of the ACB

Leigh Harris has a few pointers for those in charge of Aussie classification.

I was an authorised assessor of computer and videogames with the Office of Film and Literature Classification for eight years, classifying countless games over those years and emerging with a thorough understanding of the entire process, from beginning to end.

It is my firm belief that no videogame completely gets its fair dues in the Australian Classification System, and I beg of you, dear reader, to indulge me as I meander back through my days of submission (you can go ahead and take that in both available senses) and walk you through the process as I saw it.

Authorised Assessors were made to go out to the OFLC for a day-long training course in which they were presented with a multitude of examples of games at all potential age rating levels, walked through the specific wording of the classification guidelines, and driven through a handful of exercises where you had to guess (based on trailers, gameplay footage etc) which rating the games should receive. There was much discussion, a disappointing lack of soy milk option for the coffees, and a healthy forum for questioning the reasoning behind a typical age rating. All was well in the jungle. I was 18 at the time.

Back in the day

This was in 2002 or so, and the process for submitting a game at the time entailed a simple, two page report outlining the nature and style of the game, including a copy of the game in question and sending it off. Publishers paid a few dinars and it all sorted itself out.

Flash forward to 2010 and the report was an eleven page document wherein every single detail of the game had its own page. A page for violence, a page for coarse language (whatever that is), one for sex scenes, one for the mysterious notion of 'themes' and so on and so forth. The increased description space was perfectly valid. There was zero problem with the idea that the OFLC should need as much clarity as possible when making a decision on a game.

The problems with the process, however, came with the options a company had for presenting the game itself. You could easily just send in a copy of the game in question, but what if the game's more notoriously violent scenes were near the end? What if there was one specifically dark and morbid scene involving a suicide or a drug overdose which was woven into the narrative and wasn't easily made available in the earlier stages of the game? Publishers can, of course, implement cheats, but the logistics of creating an entirely separate build of a game which contains the cheats necessary to skip around specifically for a classification body is incredibly time consuming, and is being asked of the developer during the infamous 'crunch' time at the end of development. The logistics of such an effort for such a tiny market as Australia are simply not worth it when the prospect of missing a milestone (or, gods forbid, a submission to Sony or Microsoft) are looming ever-presently, and the direct hit to a global company's share price if a release date is missed

are very real.

So the options for submission include:

- Submitting a copy of the game and video footage of all the nasty bits.
- Submitting a copy of the game and thorough instructions of how to access all the nasty bits (through the aforementioned not-always-available cheat codes or console commands).
- Coming in to the OFLC offices and presenting the game to the board directly, showing them every nasty bit you mention in your report and answering any questions the board may have.

As a publisher with a vested interest in getting the game the most fair and accurate assessment possible, which of these available options sounds like it would be preferable? Needless to say, as the OFLC began to take a much more thorough look at videogames after several instances of media moral outrage in the early (ugh) naughties, it was prudent to select

option number three. A personal demonstration allowed the publisher to provide the kind of context for any violence (which was usually the main point of concern) that the other options simply didn't allow.

Average Joe

It was when these board demonstrations became the norm that I was exposed, first hand, to the horror that was the lack of gaming knowledge the average OFLC board member possessed. They lacked a basic knowledge of what might prompt a player to do certain

things, what the game mechanics were actually encouraging, and what they were admonishing.

As games became more complex, moral certitudes became less prevalent. Open worlds beget moral choice. Punishment for antisocial behaviours accompanied the freedom to commit those kinds of acts in equal measure. Nuance swept the gaming landscape with aplomb, and new pinnacles were being reached year on year.

How were the subtleties of punishments ever going to effectively resonate with people who still refer to games in terms of 'levels', as though we've never moved beyond the 80s?

I specifically remember the rather morbid obsession the board seemed to have with post-mortem damage (courtesy of the existence of Soldier of Fortune, no doubt), which for some reason was considered the zenith of all the worst possible violence in the world. But then, not all post-mortem damage was rewarded with any tangible or aesthetic outcomes. There were many games throughout the (ugh, again) naughties where the violence against corpses was benign, but present. These games ran the risk of an Australian banning largely due to the existence of violence that the majority of players would fool around with once, and after realising there was nothing to be gained, get on with the rest of the game. The reason was that a lack of understanding of game mechanics would lead the OFLC board to see the 'potential' violence as being equivocal to 'encouraged' violence – the exact same fallacy mainstream media seem to face when considering all possible violence to be actively endorsed by the game in question.

Consider the scene in Watchmen (mild spoiler alert) where Rorschach first finds his true calling as an utter psychopath: he has the child rapist and murderer tied to a radiator and must make the decision to either call the police or enact his own brand of justice. One look at the remnants of his latest child victim's tattered clothes and his decision is made. He takes to the killer with a meat cleaver, thwacking it repeatedly into

are only too apparent to any gamer who is, as gamers do, testing the boundaries and barriers of the game world. We *want* to know what the rules of a game are. We *want* to test those rules and see if we can break them by doing something the developers haven't thought of. And every time we do something unusual and the developers already have a response in place (any kind of response: points, an achievement, an audio byte, a visual reaction), we give them kudos for knowing how our minds work.

So, to a gamer, the slashing at a corpse indefinitely will continue if there is an ongoing reason. To a non-gamer, the mere ability to perform such an act *is* the incentive. Entirely untrue, but without being a gamer and knowing what drives a player to commit certain acts within a game space, how are they to differentiate?

the hapless dying criminal's forehead. Again and again he slashes, with the audience being subjected to an expertly-framed silhouette of the scenario, watching as the moribund killer's head flops like to much putty, cleft in twain (I've always wanted to say that in context).

The scene was gruesome, but had context. How does a videogame provide context for the repeated hacking at the corpse of a killer? It provides aesthetic feedback. Soldier of Fortune gave such explicit detail when a player took to corpses with guns and knives that it can be solidly argued that it provided an incentive in the form of a reaction from the game world. Manhunt, on the other hand, known for its extreme violence, had corpses flinch when struck, but nothing else, and could not be accused of the same. These subtle differences

Perspective shift

After a while, the pattern of the OFLC demonstrations started to become clear. No requisite knowledge could be assumed, and in order to get games past the board you would have to keep things *very* simple. But I was in control. If I needed the board to not dwell on a piece of violence which, in the context of the gameplay, was superfluous on account of not incentivising the action, I would pass it over in the exact same way a typical gamer would. But, if the board felt inquisitive and asked to see more violence of a particular kind or in a particular way, I had to oblige. So, quite often, a repeated and wanton amount of violence was visited upon innocent NPCs, dead bodies, animals or otherwise non-violent creatures, purely so they

If the board felt inquisitive and asked to see more violence of a particular kind or in a particular way, I had to oblige.

could see the extremities. Of course, there's nothing wrong with that in and of itself – the governing body of censorship in any country *should* see the worst of the worst before making a decision – but when people without experience of games are witnessing a video of non-stop violence, the ability to make solid judgments about the *gameplay context* of the violence in question goes out the window.

My theory was solidified when I went to an OFLC conference in 2006 and was subjected to content which was banned in Australia – not from a videogame, but a film: Irreversible. For those unfamiliar, Irreversible is a rape revenge story told with the scenes in reverse. It begins with the most horrifically violent scenes of heinous violence against worthy recipients, and slowly works its way back to the original

incident which validated the earlier scenes. At this conference, by way of demonstrating what was considered unacceptable for Australian audiences (Irreversible was RC'd in this country), we were shown an horrific scene in which one mean beat another to death in a nightclub with a fire extinguisher.

It was brutal. It took ages. It was difficult to watch. I felt powerless to stop it. I was appalled.

Later I would realise, after discussing the clip with my boss, that the powerlessness I felt was the main reason the scene was so devastating.

A little while later still, I would be playing Splinter Cell at home in front of my housemates. I was quite good at Splinter Cell, masterful even, and was taking out enemy after enemy

with gusto. This is unusual in Splinter Cell, since the difficulty of the game slows the pace to a nerve-wracking degree, so the moments of violence are meant to be punctuations, rather than just part of the ebb and flow. I was in a bad mood, and wasn't sparing my spectators. To them, it must have appeared like the most horrific, unceasingly violent game in the history of the world, with no place in society, just like Irreversible was to me.

Context is king

It dawned on me that, when a player is in control of the actions on screen, nothing is a surprise. The most gib-flyingly, blood-splatteringly demonic nastiness loses its impact when you know the precise second it's going to occur and can dictate the speed, angle and timing of each individual bullet.

How then could an OFLC board member, especially one unfamiliar with videogames in general, see the difference between a video of

excessive and unceasing gore in a film (which is presumably bound by appropriate context) and a videogame, wherein the actions are dictated by the player? In most of the classification guidelines, there is an old familiar phrase adorning each mention of a classifiable element as a caveat of sorts: *"if justified by context."* It is this phrase which enables and warrants the publisher making contextual arguments for any and all instances of violence.

For example, State of Emergency allows a player to open fire in the middle of a full-scale riot, blowing away countless innocent civilians on screen at one time. The mitigating factors? The remarkably cartoonish graphics offset any potential realism and the player is visibly (points are seen being deducted) punished for hitting anyone other than the corrupt authority figures. Flimsy, but effective.

In inFamous and its sequel, the freedom the player enjoyed to suck the life out of innocent civilians or heal them, poison or feed them (trite though these hilariously unsubtle moral decisions may have been) gave context to otherwise heinous acts. NPCs would throw rocks at the evil Cole and the player would be locked out of certain powers. Of course, from a gameplay perspective the inFamous games had equal and opposite powers for playing good and bad, but the narrative endings made it clear whether or not you had behaved in a socially acceptable manner.

Then of course there are the times when violence is the reward. In Mortal Kombat, the fatalities are B grade shock horror, grindhouse style gore-fests. They're over the top, look rather painful and are difficult to pull off. The difficulty here is the point, though. When the friendly

The most gib-flyingly, blood-splatteringly demonic nastiness loses its impact when you know the precise second it's going to occur.

asked to show the most gory scene in a game, the gore should be explained – the incentives clearly outlined and *any* point deductions (which may seem obvious to a gamer) highlighted. Above all, remember that a helpless passive observer of a violent video is being actively *shocked* by each blow they witness. Talk them through it – *inform* them that you're about to shoot someone before you do. *Remind* them at every turn that you are in control, that it's a game where you aren't being surprised like they are, and that you are only *choosing* to do what you're doing for reasons of thoroughness.

The OFLC (now the Australian Classification Board) needs not only to make sure that it hires gamers to be on its board so that these seemingly minute problems fade away, but also that these gamers have enough skill to take on difficult games, and that they play the games for themselves, not simply leaving their judgement to watching a sizzle reel of disaster-porn. If they don't, they will continue to place themselves at the mercy of publishers portraying their games in front of them, which, I have to say, is a good environment for pulling the wool over the eyes of the board, rather than full disclosure. ⓟ

'Finish Him!' sign appears your heart momentarily races as you feel the immense pressure of pulling off a complicated move in a very short space of time. You neglect to breathe for a moment as you fail the first time, panic and fail the second, calm your inner soul for a moment and manage to pull it off at the last millisecond. At the point where the player is exposed to the fatality, they are relieved, relaxed and enjoying their reward. The desperation is gone, as is the intensity of combat.

As a publisher, the only way to demonstrate a game to the board is to construct what amounts to a video essay. It must be rehearsed and perfected. In an open world game, when you wish to demonstrate the way in which the game negatively reinforces antisocial or violent behaviour, you must make sure that your demonstration happens to have you in the right place and at the right time to perform that act in front of a police station or other authority figure. If there is a time in the game where the protagonist commits some other moral atrocity, there needs to be a way to skip straight to a point where he is maligned for such actions, preferably by a character representing that game's moral compass. Even if those two scenes were hours and hours apart, they must be condensed in order to show repercussions for actions.

Condensing the moral lessons of a game into the hour (or two at most) you get while presenting a game to the board is one of the trickiest parts of the whole process, for a reason of mild hypocrisy.

Get gamers on board

No publisher should ever let their game be seen by the board without clearly showing direct ramifications for negative actions, and long-term ones in the overarching narrative. When being

HARDWARE

NEWS, REVIEWS AND ROUNDUPS ON THE LATEST HARDWARE

Intel's new Ivy Bridge chip is well and truly here, though to say its launch has been convuluted is bit of an understatement! Nonetheless, it's here now, and we've got everything you need to know about it in this issue.

Not only that, but we've also got a full roundup of all the latest motherboards to go with it, so if you're looking for your next big system rebuild,

there's no better place to start than right here.

Of course, the Head2Head is not alone. It's joined by new cards of both green and red varieties, some fast storage from OCZ, and a veritible raft of IO devices. Only... well, read the reviews. There's new RAM from Team Extreem, a PSU from Antec, and a couple of cases from Bitfenix and Antec. Win!

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HARDWARE CONTENTS

HOW WE **TEST**

We do a lot of testing in our labs, and we look long and hard at every piece of hardware to determine whether or not it passes muster. From taking a new card out of its packaging, to bundled extras, to performance, every facet of a given piece of kit's 'user experience' is under scrutiny.

In some instances, we have tough benchmarks to help us rate gear. For a CPU or a graphics card, raw performance is, of course, the most vital stat as whether it stinks or smells like roses, as well as the ability to overclock well. But there are other things we pay attention to in the review process.

Value for money is an important consideration, especially in the current financial climate. High end gear is expensive enough as it is, so we look for good bundles. For instance, a graphics card that comes with a game or two, all the cabling you'll need, and little surprises like tools and other bumpf will score higher than a card that costs similar, but doesn't give you any presents.

Build quality is another thing we rate. From a PC case to a motherboard, we like our hardware well-made and capable of a taking a bit of punishment. We also like any included manuals to be clear and concise.

A lot of what we look for can be hard to put into numbers, we admit, but we try to think about what any enthusiast would think about their new gear after laying down money for it, installing it, and then using it.

And our benchmarks help, too. We've picked a suite of games and applications that anyone can get access too, so that you – the reader – can easily compare your own gear with the kit we have in each issue. In fact, we'd recommend to all our readers that they run all of these tests on their systems and save the results, so you can always have a familiar benchmark of your own to compare to the latest gear in Atomic.

Our shiny Alienware-powered Gaming Lab, where we do most of our game reviewing and peripheral testing.

MAXIMUM POWER GAMING
atomic

CPU Benchmarks:

Hexus PiFast

http://pifast.hexus.net/pifast.php

PiFast is a program that essentially calculates pi to a set amount of decimal places. It is a single-threaded application (one core/thread) and we run it at ten million places (10, 000, 000) using the Chudnovsky method, in the standard mode with no compression, and a FFT length of 1024kb. The program is free, so grab it and run it on your CPU. Memory bandwidth plays a significant role in the final performance of this program, so be sure you bump up the frequency as well as the CPU clock!

wPrime

http://www.wprime.net/

"wPrime uses a recursive call of Newton's method for estimating functions", says the website as it attempts to explain in plain English what it does. What it does do is, essentially, complex square rooting and other number functions, which are able to be split up evenly between multiple cores, or simply run on a single core. We use wPrime 32M in both single and multi-threaded runs. The results of the single run are divided by the results of the multi run, and this gives us the efficiency of the CPU being tested – very useful knowledge to have when comparing chips and evaluating the benefits of overclocking.

Cinebench R11.5 x64

http://www.maxon.net/downloads/cinebench.html

Cinebench is a stalwart benchmark, and is one of the more entertaining ones to watch. It focuses on rendering an image at 900 x 650 resolution, complete with ray-traced light effects and much more. It can be run in either singlethreaded or multithreaded mode, and efficiency is calculated the same way as for wPrime. The program also supports up to 64 threads in total, and watching eight threads with Sandy Bridge-E is quite impressive. The difference in performance between 32- and 64-bit is minimal – but really, you've got no excuse for not running x64. It's 2012 after all!

AIDA64

http://www.aida64.com/

AIDA64 is the spiritual follow-up benchmark to the original program by Lavalys, Everest. It's a system information tool that monitors voltage, temperature, as well as reporting on peripheral devices such as UPS batteries. Hardware and software model numbersare noted here, but perhaps the most useful part of this program is the memory benchmarks. Ready for the fastest quad-channel memory, this tests the read and write bandwidth as well as latency. The program is a small download, but keep in mind that you only get a thirty day trial until you purchase the full version for $40.

GPU Benchmarks:

Batman: Arkham City

http://community.batmanarkhamcity.com/

"Console port," you cry. "omg ur teh n00bs" and so on. But the important take-away from this benchmark is that Arkham City is a fantastic, modern example of a cross-platform game that features the latest enhancements to the Unreal 3 engine; an engine that's going to be around for a while yet. We run it at 2560 x 1440 with 16 x AA, 16 x AF, and record the FPS as we zip around Arkham as everyone's favourite bat-themed hero. If a product can run this at a smooth 60 frames per second, it'll run almost any Unreal 3 game.

Battlefield 3

http://www.battlefield.com/au/battlefield3

Gone are the days where Crysis is an appropriate benchmark for system performance; not only are we slightly bored of seeing the same scene over and over again, but newer games have been released. One of the prettiest is Battlefield 3, a game that commands a large, loyal following, in part due to its brilliant graphical engine: Frostbite 2. Featuring destructible terrain and shiny visuals, we run it at 2560 x 1440 with 2 x AA and 8 x AF. If a product does well here, it's going to be fine in basically every title in the forseeable future.

Unigine Heaven 3.0

http://unigine.com/products/heaven/

A synthetic benchmark built specifically to harness the latest and most demanding features of DirectX 11, Heaven is one of the best ways to test a card's tessellation capabilities. With a built-in timed run around a fully realised world, this benchmark taxes cards significantly and puts them under serious stresses. We test at a resolution of 2560 x 1440 using 2 x AA and 8 x AF, completing a run of the built-in benchmark. We set all the settings to 'extreme', including tessellation. This highlights how well the cards can handle DirectX11 features and what they'll be like in a game that takes advantage of those techniques.

3D Mark 11

http://www.3dmark.com/3dmark11/

It really wasn't that long ago that we were introducing readers to 3DMark Vantage, but the relentless pace of hardware creep has led to a whole new benchmark, 3DMark11. Designed to measure a PC's gaming performance, this latest version makes extensive use of all the new features in DirectX 11 including tessellation, compute shaders and multi-threading. We test using the Performance preset, which runs at 1280 x 720 with no AA or AF. This isn't the highest settings, but the free version of this benchmark can only use this preset; feel free to compare your scores with ours!

Intel Core i7 3770K

Ivy Bridge hits the Labs, but we feel like we've known it for months...

3500MHz > 4800MHz
37% OC

Street Price $330 **Supplier** Intel
Website www.atomicmpc.com.au/137_3770K
Specifications Socket 1155; Z77 chipset; DDR3-1600; 3.5GHz Core Clock; Intel HD4000; 8MB L3 Cache

The launch of Ivy Bridge has hardly been discreet; Intel has arguably had one of the most disorganised product unveilings ever, with dozens of reviewers leaking information early, overclockers posting benchmark scores and Intel itself changing its release and review dates almost weekly.

So, if you haven't read all there is to know about the 3770K months ago, when nearly everyone was leaking information, we've got a brief run down for you here, along with new Z77 motherboards a few pages away.

The i7 3770K is the new flagship processor for the Intel "mainstream" platform. It will slot right in to your existing P67 or Z68 motherboard providing your manufacturer releases an updated BIOS (P67 may not receive an update in many cases), or if you prefer to go with shiny new motherboards each time you upgrade, Intel has also launched the Z77 chipset coinciding with the launch of Ivy Bridge.

The first thing worth noting about Ivy Bridge is that this is a "tick" cycle. It isn't a complete overhaul of architecture, it isn't even much of a tweak – it's mainly a die shrink and graphics upgrade. This means the CPU will run a little cooler, use a little less power, and also sports a better integrated GPU for mobile or SFF use.

The improved graphics power notably helps with video and gaming (though it is still far from perfect), lower power draw improves battery life (slightly), and lower heat allows for a higher core clock. It's clear the mobile segment was Intel's primary focus for Ivy Bridge, and UltraBooks could be available as soon as May.

In terms of overclocking, the chip is both incredibly exciting and unbelievably disappointing. On air, the 3770K will hit around

the same frequency as the Sandy Bridge i7 2600K. That is, around 4.8GHz as a maximum stable clock on average – that is the disappointing part. The excitement is due to the removal of the "cold bug" when using extreme methods of cooling. In our testing we were able to "cold boot" at around -165°C without issue, and upon later testing with Team AU, came to find the vast majority of chips (around 95%) could boot up at roughly negative 186°C degrees – about as cold as Liquid Nitrogen can take you.

With this we will see a rush for records, as Sandy Bridge CPUs were a little lacklustre when it came to extreme temperatures. For example, we achieved a 4.9GHz overclock on our i7 3960X while water cooled in the office, while liquid nitrogen only took us to 5.3GHz. This was due to temperatures being very restrictive on Sandy Bridge, often crashing at negative 60°, and refusing to "cold boot" on temperatures sometimes as warm as 5 degrees positive.

One exciting feature exclusive to Ivy Bridge is **Lucid Virtu MVP**. This technology pairs the integrated Ivy Bridge GPU with your dedicated card, giving you a boost in some gaming titles of around 15% in frames per second, though gains of up to 50% have been recorded in some titles.

Examples of this are 3Dmark 05 and 06, along with specific games like Street Fighter IV. GPU pairing does not work if you use CrossFire or SLI technology, however, and the technology is only useful for using Intel Quick Sync on the integrated GPU for accelerated video conversion.

Extreme overclocking and Lucid MVP aside, there really is no need to upgrade from Sandy Bridge to Ivy Bridge. The advantages are nice to have, and are a decent step up over the previous generation, but it's not worth trading in your 2600K just yet. Sure, if you have an old C2Q Q6600 you should probably consider upgrading, though the time for that has arguably been since the i5 2500K launched, and if you haven't bothered to upgrade yet then Ivy Bridge hardly gives you a greater incentive. **MW**

Intel Core i7 3770K

i7 3770K	Stock	OC1 (Stock Volts Overclock)	OC2 (Highest Stable: 37%)
	35 x 100; DDR3-1600 @ 9-9-9-12 1T	38 x 102; DDR3-1632 @ 9-9-9-12 1T	48 x 100; DDR3-2400 @ 11-12-12-26 1T
PiFast (seconds)	18.94	17.05	13.27
wPrime 32M – Single-thread (seconds)	35.239	31.72	29.72
wPrime 32M – Multi-thread (seconds)	6.928	6.235	4.949
CineBench R11.5 x64 – Single-thread	1.65	1.82	2.01
CineBench R11.5 x64 – Multi-thread	7.45	7.98	8.87
AIDA Read (MB/s)	19626	19926	23942
AIDA Write (MB/s)	23793	24125	26456
AIDA Latency (nanoseconds)	26.5	26.2	25.6

Performance — The best "consumer" CPU on the market. **95**

Bundle — It's just the CPU and the exclusive Lucid MVP. **80**

Value — High performance, with a price tag to match. **85**

Build — You can't flaw the quality of Intel's latest CPUs. **99**

Overall — A good match for any enthusiast.

90%
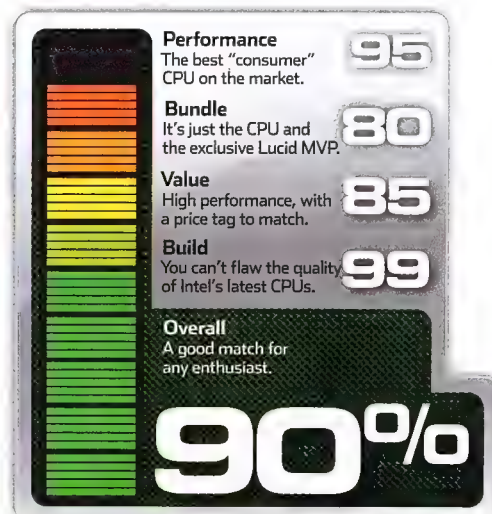
ASUS HD 7850 DIRECT CU II

A great overclocker, but sloppily put together.

Street Price $319 **Suplier** ASUS
Websites www.asus.com
Specifications 870MHz core; 1210MHz memory
(4840MHz effective); 'Pitcairn' core; 1024 Stream
Processors (AMD); 2GB GDDR5; 256-bit bus width; dual-
slot active cooling; 6-pin PCIe connector.

22% OC

Pitcairn is the baby brother of Tahiti, and as such, has been used to power the 7800 series of cards from AMD. Don't be fooled though, as 1024 Stream Processors, 256-Bit memory bus and a PCI-E 3.0 bus still give this card the potential for great things when overclocked.

ASUS has equipped its HD 7850 with a cooler that looks like it was ripped directly from its 7870, despite the fact the 7850 measures around 4cm shorter. That's right, ASUS has hung its DCU II cooler off the back of the 7850 by a good couple of centimetres, something that is generally a no-no in the enthusiast GPU market.

In order to power the board, you'll need a 6-pin PCIe power connector, which conveniently enough has been buried underneath the heatsink. Any attempt to plug the power cable in here will likely see your fingers cut to ribbons on the aluminium cooling fins. In order to save your blood for the Red Cross, Asus has attached an extension cable for you, dangling hideously off the rear of the card. We admit this solution is better than making you bleed for your system, though simply flipping the power socket 90-degrees would have meant you could plug the cable in on the top of the card – you know, like most non-reference cards do these days.

There is a slight up-side to Asus slapping such a monstrous cooler on the card however, and that is, obviously, temperatures. With a cooler designed for a bigger, hotter 7870 cooling a 7850, we were sure to see some nice temperatures, and that we did. The only thing is, the 7850 is such a cool-running card anyway; running at temperatures 5-8C cooler than a smaller cooling solution is relatively pointless.

If you're running at 50C or 55C it hardly matters at the end of the day, as both temperatures are extremely low for gaming hardware.

Overclocking is fairly exciting on this card, however, with our sample going all the way from 870MHz to 1050MHz – the maximum allowed under the ASUS overclocking software. Our curiosity fuelled, we loaded up our unlocked version of MSI Afterburner, with which we later came to a resting point of 1110MHz on the core clock, a nice 21.6% overclock.

Temperatures only increased a couple of degrees, going from 56 at load to 62. Idle temperatures are more than adequate, barely breaking 8C above ambient. The fan profiles themselves are set a little lower than usual, but given the cooler is overkill for this card we aren't surprised. Never spinning above 2,000RPM, you'll simply never hear a whisper from this card, even under heavy loads and overclocks. Of course, you can turn the fans up manually if you want your card running even cooler.

For anyone considering custom cooling, it's not a bad option, given the PCB of this card is only 197mm, you really could fit it in the smallest of cases if modding is a second hobby of yours. Or indeed, if you can find a single-slot cooler, fitting this inside an ITX case could also be a bit of fun for some portable gaming.

As for overclocking efficiency, it actually scales fairly well. This is no doubt due to the 256-Bit memory bus, which is usually reserved for GPUs with a higher throughput. The average Atomican should have no problem running this card at 1.1GHz for benchmarking runs, and 1GHz for their day to day gaming, bringing its performance up much closer to a 7870.

The price is a little higher than your average 7850; in fact, it's a fair chunk of change when you compare it to the likes of a Gigabyte 7850 OC, which comes with a factory clock of 970MHz for $40 less. Really, for that reason alone this card is only worth buying if you find it for less than $300, and even then, the cooler design is a little crazy. We're not going to tell you to avoid it, as some people may like a cooler that hangs 60mm (literally) off the back of their card; we're just saying there are likely cheaper, and arguably better value cards around. **MW**

ASUS HD 7850 Direct CU II *Synthetic Benchmarks*

Unigine Heaven. Avg – 19.2
3DMark 11 – 5975
Score
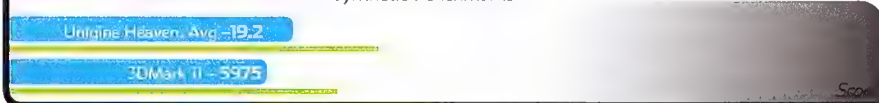
ASUS HD 7850 Direct CU II *Gaming Benchmarks*

Battlefield 3
Avg – 19.2
Min – 10

Arkham City
Max – 39
Avg – 63
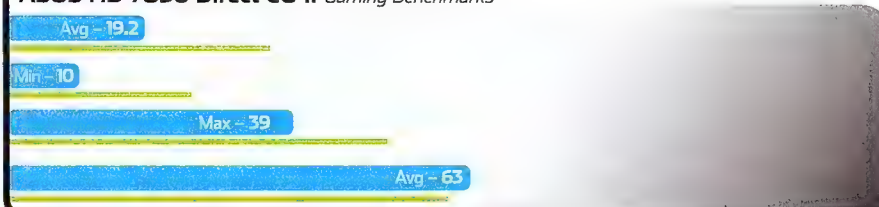
= Reference scores: Radeon HD7950   *Frames per second*

Performance
A nice overclocker. **91**

Bundle
The essentials, and some software. **85**

Value
Reference 7850s can be up to $65 cheaper. **75**

Build
Very sloppy cooler design. **65**

Overall
There are better options out there.

79%

GIGABYTE GTX 680 Overclocked Edition

How 'bout some stock, NVIDIA?

Street Price $729 **Supplier** GIGABYTE
Website www.atomicmpc.com.au/137_GB_680_OC
Specifications 1071MHz core; 1500MHz memory (6000MHz effective); 'Kepler' core; 1536 CUDA Cores(NVIDIA); 2GB GDDR5; 256-bit bus width; dual-slot active cooling; 6-pin + 8-pin PCIe connectors.
Link www.atomicmpc.com.au/Review_GB_680_OC

GIGABYTE were fairly quick in getting the GTX 680 overclock sample to market, this is largely due to the fact it is built following the NVIDIA reference design. This means full-cover water blocks will fit easily on to the cards, and also means "GPU Boost" is fully enabled, for better or worse.

The Windforce cooler looks to be the same as always, comprising of three thin fans and a fairly slim aluminium heat sink that spans the entire length of the card. The cooler is thin enough to "stack" four cards together in 4-way SLI, unlike many other models on the market today, yet efficient enough to keep the GPU core and all on-board componentry nice and cool.

In our testing we never exceeded 80°C, even while running the fans at an inaudible 1,800 RPM. If you would like to keep temperatures closer to the 70°C mark under 3D load,

increasing the fan speed to a whisper-quiet 2,500 RPM will provide a good balance of temperature and audibility.

For air overclockers this card is more than adequate, and even water-cooling Atomicans will find joy in working on this card. We managed a core clock of around 1230MHz, which should be more than enough grunt for any game, even when spanned across three screens. For those wanting to take the card further, we would suggest waiting for the Super Overclock Edition, which will have a new VRM design, allowing users to bypass the "GPU Boost" technology.

GPU output includes two DVI, single HDMI and a single Display Port, giving users the freedom to connect any monitor without the use of dongles or adapters.

All in all the GTX 680 Overclock Edition from Gigabyte is a good all-round card, offering high connectivity, a compact – yet powerful – cooler, a three year warranty, fair price tag and decent overclocking headroom, one can't really complain. All that is left to do is find a store than has 680s in stock. **MW**
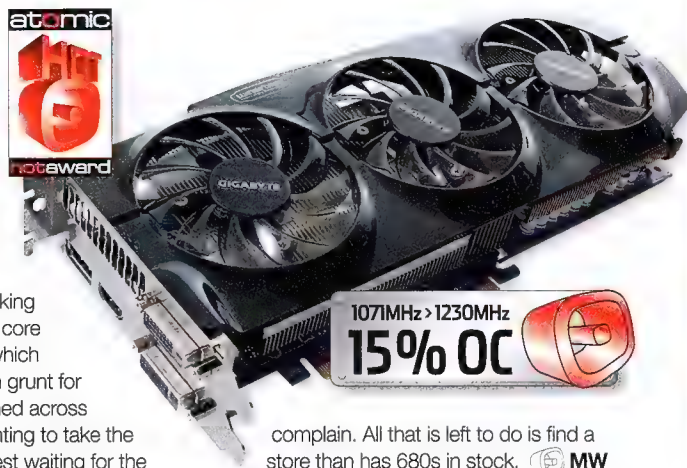
1071MHz > 1230MHz
15% OC

Overall
A great offering for your hardcore gamer.
92%

Gainward GTX 680 Phantom

An expensive choice, but a great card.

Street Price $729 **Supplier** Gainward
Website www.atomicmpc.com.au/137_680_Phantom
Specifications 1084MHz core; 1575MHz memory (6300MHz effective); 'Kepler' core; 1536 CUDA Cores(NVIDIA); 2GB GDDR5; 256-bit bus width; triple-slot active cooling; 6-pin + 8-pin PCIe connectors.
Link www.atomicmpc.com.au/Review_680_Phantom

It hasn't been all that long since the GTX 680 first hit the market, yet Gainward have still managed to release a custom cooled, custom PCB design GTX 680 onto the mainstream market. Yes you read correctly, this card is custom PCB design.

The significance of NVIDIA allowing companies to step off their pre-set path is significant because that allows manufacturers to also step away from the restrictive "GPU Boost" technology Nvidia implemented on their reference PWM. The fact that cards are coming out with non-reference PWM and VRM design gives hope that GPU vendors will have the freedom to create top-tier overclocking cards – without "GPU Boost" holding them back. As for this card, it reached around 1225MHz (boost clock) before finding instabilities.

When using MSI Afterburner with this card, you can set a specific clock, though GPU Boost still comes into play and will alter it - you're simply setting a "maximum" core clock, not a static one. In EVGA Precision X, it is the same story as reference, with GPU Boost taking over clock control, and power draw being monitored and throttled when the card is not under heavy load.

The GPU is fed power via a 6-pin and 8-pin PCI-E power plugs, which – the same as reference – have been "stacked" on the top of the card, making for easier connections and removal of the card from your case.

As for the cooler, it does a fairly decent job, never spinning above 2,500 RPM with the stock profile, and never becoming audible, even when run on our open-air desktop. Temperatures stayed at around 68°C typically under 3D gaming load, with the maximum load reaching a respectable 76°C under 3DMark 11. The card takes up two and a half PCI slots, so be aware of that if you plan on running SLI.

Overall Gainward is a nice addition to the GTX 680 family, especially considering it is one of the first models to come out with a non-reference design. If you are looking for some more RAM , Gainward are releasing a 4GB variant shortly. **MW**

1084MHz > 1225MHz
13% OC

Overall
Not a bad addition to the range.
88%
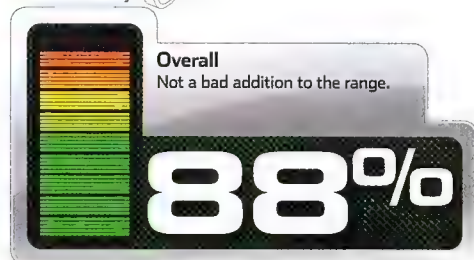
Topre RealForce 104UB XF11T0

One of the best keyboards you'll ever type on.

Street Price **$269** Supplier **Topre Corporation**
Website **www.atomicmpc.com.au/137_Topre**
Specifications **N-key rollover; USB 2.0; electrostatic switches w/ 30 million keystrokes; sublimated-print keys.**

You invest in a good office chair for your back. You purchase an IPS screen for your eyes. You grab an ergonomic mouse for your wrist. If you've already got these things, then a solid keyboard should be next on your list.

Uniquely in the mechanical keyboard market, the RealForce 104UB is not a luxury model in the traditional sense – there's no backlighting, macro keys, media controls, additional USB ports, nor any wrist rest. And the price tag is most certainly high: $270, almost enough to buy two mechanical boards from other brands. So what do you get for your money?

One seriously fantastic typist's keyboard.

The reason this is such a good keyboard to type on lies in the switches; rather than being clicky models from Cherry, these Topre switches are electrostatic and are effortless to type on for long periods. They're individually weighted based on which fingers are supposed to press them, leaving a consistent feel across the entire board. They spring back nicely after each depression,

and feature full n-key rollover so you can press up to 20 keys at once and have them all register perfectly.

They're black with black printing; compared to the RealForce 103UB we looked at in 2009 the print is the same, but the lettering is larger to allow slightly easier picking of rarely-used keys. Black looks great, and certainly gives off a 'hacker' feel. However, if you can't type a mostly error-free sentence with your eyes closed, you should choose the white version.

The 104UB has just a single extra key, the right-hand Windows Flag, and this is not particularly exciting. For the price we would've

hoped a wrist rest would be included, but this is not the end of the world. If you sit at the computer and type for hours a day, this is definitely a great investment – for gamers and most users, it's simply too expensive to recommend. **JR**

Overall
A fantastic no-frills product with a high price tag.

80%

OCZ Vertex 4 512GB

Everest 2 ousts Sandforce in OCZ's lineup.

Street Price **$799** Supplier **OCZ**
Website **http://www.ocztechnology.com/ocz-vertex-4-sata-iii-2-5-ssd.html#overview**
Specifications **512GB Capacity, SATA 6.0Gb/s, Indilinx Everest 2, 2.5" SSD, 5-year warranty.**

OCZ's Vertex SSDs have historically been the company's highest performance product line. In the past this has meant that they pack the latest Sandforce controller chip, but that has changed with the launch of the Vertex 4. The Vertex 4 uses 1GB of cache, paired with an Everest 2 controller, which is a combination of silicon from Marvell and firmware developed by Indilinx, a company that OCZ purchased last year.

We saw the first fruit of this union in the form of the Octane 512MB that we reviewed a few months ago. That drive used the first iteration of Everest and was designed to be a lower cost model. Unfortunately for the Octane, the current reality is that the Vertex 4 is actually cheaper, and from our testing, the Vertex 4 is also a much better performing drive.

Again, OCZ has deigned to send over the 512MB version of the Vertex 4, which is selling

for a cool $800 (vs the 512MB Octane's tag of $940). It is likely that the lower capacity drives that us mere mortals actually buy will be slightly lower in performance, but this drive should still give a good idea of what to expect from the Vertex 4 lineup.

Expect speed, especially when dealing with the kind of small file transfers that make up most day to day operations. We saw sequential reads and writes around 460MB/s, and our testbench was fast and responsive. It isn't the same kind of generational jump seen with the introduction of new Sandforce controllers in the past, and now that SATA 6Gb/s is commonplace it is unlikely that we'll see massive leaps between generations of SATA drives anyway.

The real benefit that the Everest 2 controller has over the competition is that it is unique to OCZ. One of the realities of Sandforce controllers are that everyone uses them, which minimises the performance difference between different brands of SSDs. Not only does the Everest 2 deliver consistent, excellent performance but

it also comes with a five-year warranty, which demonstrates the amount of confidence that OCZ is placing in its new design. **JG**

Overall
Not only does OCZ beat the competition but it makes its other SATA drives look kinda shabby

91%
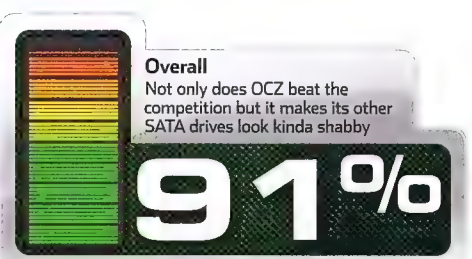
Roccat Kone[+] gaming mouse

Our first taste of Roccat in a long time is not a positive one...

Street Price $79 **Supplier** Roccat
Website www.atomicmpc.com.au/137_Kone_Plus
Specifications Pro-Aim Laser Sensor R2, up to 6000dpi; 1000Hz polling rate; 1ms response time; 30G acceleration; Tracking & Distance Control Unit; 72MHz TurboCore processor; 576kB onboard memory; 2m USB cable.

At first blush, there is a lot to like about Roccat's Kone Plus (or more accurately, [+]). From the luxurious packaging, to the shiny credit-card like Roccat ID card, it seems a pretty premium product – kinda like the mousing equivalent of an Alienware PC. Even out of the box, it feels like it should be all about good gaming times, but then, you plug it in, get the almost inevitable firmware update... and your gaming life turns to shit.

Harsh words, yes, but if you're an FPS gamer – like me – then this really is a mouse worth avoiding. That warning counts double if – again, like yours truly – you're fond of picking up your mouse for fast direction changes. My biggest issue with the Kone – or at least the Kone sample we have in the lab – is that the sensor is just too damn jittery. Even if you're trying to achieve a flat, level movement, in a game like BF3 you'll get some pretty noticeable jitter,

and this is only magnified when scoped in. Even worse, the cursor drifts in an almost predictable diagonal movement upon pick-up and put-down. It's just random enough to render any chance of compensating for it impossible. All up, it makes FPS gaming a frustrating, distinctly un-fun experience. It's not unlike the jitter we felt with SteelSeries' last mouse, but that was fixed by a firmware update – Roccat's own update, which in itself suggests the company's aware of issues, has not had any noticeable effect.

To add injury to insult, the effort to control the jitter leads to a nasty forearm ache. Fun.

This is annoying from a game-performance level; otherwise, the Kone Plus is a very comfortable mouse, and structurally well-made. The thumb recess in particular is uncannily comfortable; more curiously, the software to support the mouse talks at you by default. It's... odd, to have a mouse tell you when you've switched DPI up or down.

First impressions of the Kone Plus are obviously not everything. It feels great, but in-

game it just makes you want to ragequit and consider treatment of whatever carpal torture you've just put yourself through. **DH**

Overall
Looks great, plays like a cow.

47%

Rude Gameware Fierce mouse pad

Is there such a thing as too smooth? You betcha.

Street Price $35 **Supplier** Digital World Warehouse
Website www.rudegameware.com
Specifications 300 x 250 x 3.25mm; steel body; rubber base.

One of the curious joys of being a passionate PC gamer is the sensation of getting a new mouse with virgin feet. So too is the sensation of finding a perfect match between mouse and mousing surface; more than just feeling good, this frisson can have a deep impact on not just your enjoyment of gaming, but also your in-game performance.

That being the case, I was really looking forward to seeing Fierce's Teflon-surfaced pad in action. Like it says on the tin, it really is just about the smoothest mousing surface we've ever used, and being implanted on a steel body, it's super-rigid and very durable in transport. The standard Atomic mousing surface has been a Cooler Master rigid plastic model, which I've been using for years, so I had high expectations.

Expectations that were sadly dashed in just a brief session of intense gaming – it is literally too smooth for its own good.

With a relatively new mouse – the Corsair M60 – there's just not enough feedback such as

how far and how fast your mouse is moving, leading to some serious under and oversteer, especially with zoomed in crosshairs. With the Cooler Master's just-fine-enough grain, there's a sense of travel that's entirely lacking in the Fierce pad. What's more, the heavy steel body is a real temperature sink, and given we tested during relatively cool weather, it was actually a little uncomfortable.

However, even worse than the lack of feedback, is the poor tracking on the M60's laser sensor. Slow movements, like tracking a walking target in Battlefield 3, seemed jumpy and inaccurate; fast-tracking movements, such as quickly turning about to avoid being knifed are almost impossibly laggy. In one such instance, a fast sweep of the mouse left me un-moved at all, gifting my enemy an all too easy kill.

Given the highly personal nature of user and mouse interaction, it feels churlish to condemn Fierce's effort out of hand based purely on my terrible time with the product. However at the same time, with such poor feedback and performance, it's hard to ask anyone to risk their

hard-earned on a solution that may very well hinder gaming performance. For all that the Fierce Teflon pad feels like a premium product, and is certainly sturdy, its poor in-game feel makes it a product that we just can't stick with. **DH**

Overall
Solidly made, but terrible in a live gaming situation.

52%

Team Xtreme LV 2600MHz 16GB CL10

So much RAM at ludicrous speeds.

Street Price $TBA Supplier Team Group
Website www.atomicmpc.com.au/137_Xtreme
Specifications 4 x 4GB kit; PC3-20800 (2600MHz), 10-12-12-31 2T; 1.65v; 240-pin DIMM; Non-ECC unbuffered DDR3
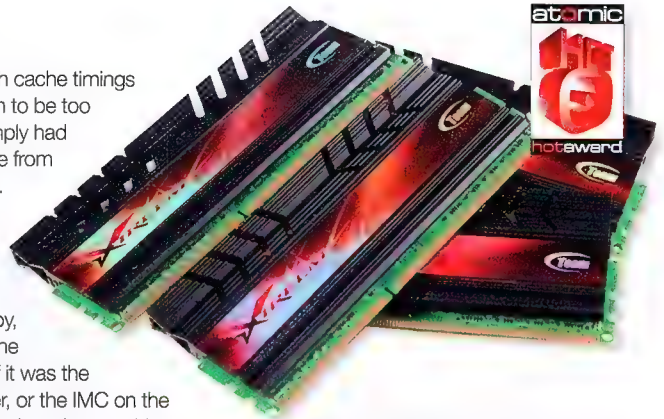
Team Xtreme is a name many Atomicans would be familiar with; we sang their praise back when 800MHz kits were the must have piece of kit with your E8600 C2D CPU. Team offered a lifetime warranty, a good binning process that guaranteed far better clocks than those printed on the box and most importantly, they looked great.

Jump forward to today, and Team Group are keen to show relative newcomer G.Skill that they haven't lost their touch. Today we look at a new kit from Team, and it's still bearing the same name as it was all those years ago – Xtreme.

Enabling XMP in BIOS will give you the 2600MHz CL10 clock as seen in the specifications above, but that isn't important: what we want to know is what else this kit can do. Taking manual control we pushed our poor i7 3770K to take us further, remembering 2600MHz is already a very high frequency for the Intel IMC.

Booting at 2800MHz with cache timings of 11-13-13-34 didn't seem to be too much of a problem. We simply had to increase the RAM voltage from 1.65v to 1.8v, easy enough. Taking the RAM further proved difficult, however, even increasing the IMC voltage to 1.05v (up from 925mv) didn't give us any joy, nor did pumping 1.9v into the RAM itself. We aren't sure if it was the kit refusing to take us further, or the IMC on the new Intel Ivy Bridge platform, but given we hit a stable clock of 2800MHz on this kit with nothing more than passive cooling, we think it's safe to say this kit has the goods.

If you want a kit that has a lifetime warranty, overclocks like the clappers, has a "moderate" heat sink size and comes in dual or quad channel, this kit is as good as it gets. There is one small problem however, and that is the price tag. We don't have a concrete price confirmed for Australia yet, but our educated guess is we will see this kit online for around $500, meaning this is a piece of hardware reserved for serious overclockers, or your PC user from 2007 who hasn't noticed the average price of RAM in 2012. **MW**

Overall
Very fast kit, overkill for 99.99% of users.
90%

Antec Earthwatts Platinum 650

80-Plus Platinum arrives in the mainstream.

Street Price $35 Supplier Digital World Warehouse
Website www.rudegameware.com
Specifications 300 x 250 x 3.25mm; steel body; rubber base.

It has been a long time since we reviewed, let alone liked, a non-modular power supply in Atomic. When building a PC it's far more convenient to not have to deal with extraneous cabling than it is to save the few bucks by going with an all captive cable design. But we make an exception in the case of Antec's Earthwatts Platinum 650 for one very good reason – it offers high efficiency at a very reasonable price.

We're used to seeing at least 80Watt Bronze ratings slapped on every PSU we encounter. Higher efficiency is always a good thing – not only does it mean a PSU is generating less heat but it also means that power bills will be a touch lower. But historically high efficiency ratings are relegated to the high end of the PSU market, which is great if you're building a Quadfire beast, but it keeps it out of the average gaming or general purpose PC build.

As the name suggests, the Earthwatts Platinum 650 has an 80-Plus platinum rating; the second highest in the scheme. 80 Plus Platinum means at least 90% efficiency under all loads and is roughly 10% more efficient than an 80 Plus Bronze model. This rating is achieved through a few means, most notably through the aforementioned use of captive cables.

This means that it isn't a design for everyone. There are two PCI-E 6 or 8 pin plugs, which means a single graphics card, although the four molex and six SATA connectors will be enough to power most hard drive setups.

The unit itself is quite short at 140mm, which makes it quite a tempting option for smaller systems (and gives a bit more space to tuck away cabling). It also has a nice, quiet 120mm fan.

Unless you plan on using multiple graphics cards, this is a great option for the price. We can see it particularly shining in Micro-ATX and Mini-ITX builds where the reduced length will come into its own. As long as you're prepared to give up modular cabling for the 80 Plus Platinum status, this is a fantastic little PSU. **JG**

Overall
An excellent 80-Plus Platinum PSU for a reasonable pricetag
93%

Bitfenix Shinobi XL PC Case

A big, flexible case that compromised too much to reach its price point.

L et's get the admission of possible bias out of the way now. I really like Bitfenix.

We're certainly not alone in thinking that the company has managed to have quite an impact on case market, with a range of impressively designed, budget-priced cases that would please even the most choosy of PC enthusiasts. With lovely rubber-finished surfaces, a plain, yet elegant design (and some mighty aggressive choices, if that's your thing, too), Bitfenix is easy to recommend.

That said... there's something just not quite right about the new Shinobi XL.

All things for all people

The issue is that the XL is probably trying to do too much, and in trying to be a jack of all trades it ends up being master of none. This might be a fine approach for a character in an RPG, but for a PC case, there's every likelihood that a buyer is going to have a firm idea of what kind of case they want to build from the start.

So on the one hand, while the XL tries to be a great case for airflow, with two whopping big 230mm fans taking of intake and exhaust duties, with another 120mm model helping on the latter, there are in fact better cases in terms of stock fans and airflow for a similar price. Then, on the other hand, Bitfenix is very proud of the how good the Shinobi XL is for those looking for a liquid cooling solution. It's true, too – there's room in the front and top spaces of the case for large radiators, and the ability to remove the HDD cage entirely. However, if you're going that far, chances are you're looking to spend more on a case anyway, and then mod it to fit your chosen loop setup.

Plus, you can see that Bitfenix is still thinking in budget terms, with plastic thumbscrews even at this price point. Now, you can call me harsh, I can take it, but they have no place in a case costing not far off $200.

Buts and nolts

The Shinobi XL certainly looks the part, however, and truly lives up to the XL moniker – this is a large case, though very light for the size. More often than not, when case-makers produce

anything in this size range they'll reflexively start adding more bits and pieces, so you come to expect XL-ATX cases to have a certain heft, even before you add your own gear. It's complete with Bitfenix's lovely SofTouch rubber coating, has some great mesh detailing, and simple lines. IO ports are on the top, front edge (including the pretty handy SuperCharge port, a USB outlet designed for charging devices, providing 2.5A of current), there's a mesh panel on the top surface, and otherwise, nothing breaks up the bold lines.

The rear panel's got some nice touches. Apart from a 120mm exhaust fan, there's meshed expansion brackets, for better airflow, and all the external water-cooling outlets are nicely grommetted, but also ranged across the top edge.

The internals are, as you'd expect, roomy. The 5.25in bays are secured by an interesting tool-less option, one that uses a sliding push-button that just yells "I like to jam awkwardly"; it works fine now, but the mechanism seems prone to long-term issues. The HDD bays are all housed in a caddy that you can swivel so that it faces out of the case, or along its length; or you can take it out completely if you want more space for water cooling or a crazy-long graphics card. The drive caddies themselves are, again, tool-less, and pinch in and out.

As for room for hardware, you can fit a video card up to 334mm long with the cage in place, or up 487mm long without it. And while we're

at it, CPU cooler height is up to a shade over 181mm.

The motherboard plate is nicely laid out, complete with a lettered guide to where you need to install the stylishly black stand-offs depending on what size 'board you're installing. There's a large cutout for access to the CPU cooler, and there's about a full inch of clearance behind the plate for stowing excess cable. In fact, in terms of cable management, the

case is pretty much flawless. There are rubber grommetted cable runs all around the backing plate, and even the IO cables are already threaded through one of these, out of the box!

The PSU mount has rubber grommets for quiet computing, and there's a couple of mesh inserts (one removable) to keep dust out of the interior. The tight mesh on the front intakes should help in this regard, too.

The thing is, looking back over those specs and features, there really is nothing wrong with the Shinobi XL; in fact, it's very good! It's only when you compare it to similarly priced or featured cases that it starts to look a *little* lacklustre. There's a swathe of cases that give you similar cooling for less, while spending just a few dollars more will see you entering luxury SilverStone territory, or mighty gaming giants like the Antec Twelve Hundred V3. However, if you like the Shinobi XL, are currently pondering an air build that you might want to upgrade to a liquid solution one day, and you have a thing for soft rubber under your finger tips (boy did that come out wrong), then this adaptable case is probably a great choice. **DH**
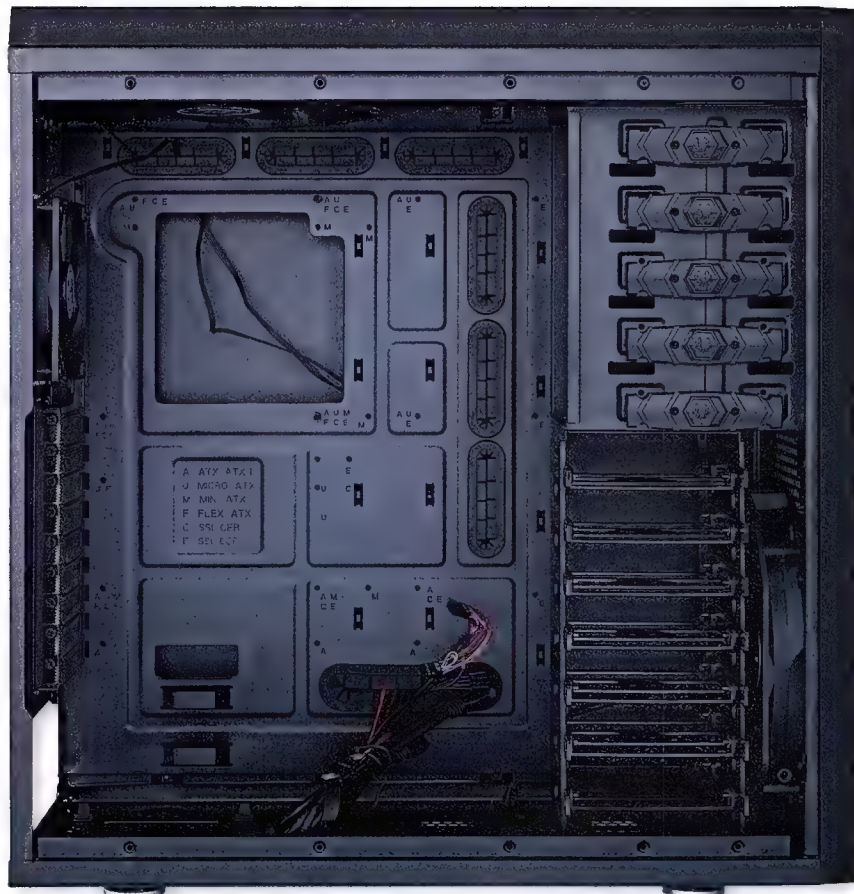
Build 81
Very sturdy, though tool-less options are lacking.

Value 76
Great price for XL-ATX, but few extras.

Cooling 91
Big fans, plus room for liquid options.

Features 83
Solid, but not as well-made as it should be.

Overall
Packed with options, but not excelling at any of them.

84%

Antec One Case

Antec dives into the budget end of the pool, with a perfectly competent design.

There's no denying that there's been a seismic shift in the PC case market over the last 12 months. Both the higher mid-range and low-end budget segments have seen two new powers really come into their own. Corsair has consistently delivered lushly designed, fully specced cases in the sub-$200 field, while Bitfenix has pretty much put a lock on the sub-$100 space. Sure, you've still got your Cooler Masters and SilverStones doing their thing, and very well, but in our mind it's hard to go past the two current leading case makers in their respective areas.

That said, the market will always respond, and one of the heavyweight contenders, Antec, has come out swinging in the shape of the Antec One. This is a bare bones case made by a company that's normally known for gaming aggression or slick and silent style. In the past, we've thought Antec looked a little off the boil, especially with its Eleven Hundred design, which seemed at least a year off the pace. The One – gosh, it's going to be impossible not to make Matrix quotes; you have been warned – on the other hand, has a low price and just about everything you could want in a clean and simple chassis, one that's going to be a breeze to install into and sturdy to boot.

Outwardly – and unsurprisingly – it's not much to look at. Two leading bevels project either side of an all-mesh fascia with three removable panels for 5.25 drives. All the IO and controls face out from the upper edge; it's nice to see USB3 ports, and two at that, at this price point, with a USB2 adapter included. The upper surface is broken only by a slightly raised internal fan mount, occupied by a single 120mm fan exhausting hot air, while the right-hand panel has an embossed section to make room for hiding cables behind the mobo plate. There's a similar protrusion on the left-hand panel, with another fan mount; this one, like the front and bottom mounts, is vacant at stock.

The rear panel's interesting, though. Not only do you have a second exhaust fan, and the usual grommets for watercooling, but the One (trying hard here) might also be showing its roots. It's not unusual, even in this day and age, to see punch-out expansion slots, but it is rather

stranger to see an IO shield that seems to date to the days of serial ports, dot-matrix printers and AT specced motherboards. It's either a really cool in-joke, Antec trolling us, or possible evidence that the One (steady, Hollingworth – you're doing good) is based around a rather more ancient chassis than it first appears.

The side panel comes away smoothly, though we're still unhappy with any case that features plastic thumbscrews, and the interior is certainly clean. It's a bit cramped, but at this price you're probably not looking to pack out your build with video cards the size of Super Star Destroyers. In terms of numbers, your VGA card should be no longer than 260mm, and there's room for CPU cooler as tall as 150mm. Neither's a real killer.

What might be more problematic is the design of the HDD cage. It faces back into the case, requiring the other panel to be removed for access to drives. The cage itself is a tool-less design, and a good one too, and there's a cool hex-shaped pattern of cut-outs to keep the weight and material down, but it's still an odd and awkward choice. Most budget builders probably won't be doing constant drive swaps, so it's not a huge problem, but it's something to be aware of if you're an unrepentant tinkerer on a tight budget.

The ODD bays are also tool-less, using a levered system that is not only simple, but quite reliable. The theme of not much room continues with the mobo plate; while there's a generous cutout for cooler access, there's not a lot of room behind here.

The build quality is Antec's usual high-standard. It's light enough that you could even

Your VGA card should be no longer than 260mm, and there's room for CPU cooler as tall as 150mm. Neither's a real killer.

build a simple LAN rig into it; it's not built for high mobility, but if you're not tossing the One (easy...) around it should handle travel pretty well. Certainly, our patented 'bash it, see if anything rattles' test shows the case to be quite sound. It's also plain enough to serve as a cheap and

simple template for any case mods you might want to be trying out; it's always best to start with cases a bit more on the disposable side when you're breaking out the angle grinder for the first time.

The possible vintage providence of the Antec One aside, this is a great budget option. For the sub-$70 asking price – and it'll likely get cheaper soon enough – you're getting two fans at stock, tool-less build options, and even rubber mounts for the PSU slot. It's solid, with room for modest expansion if the stock options aren't to your liking, and with an all black interior, it certainly looks the part. Antec's fired a nice little shot across Bitfenix's bows with the One (woohoo!), and we have a new budget standard. **DH**

Build
Solid, if maybe recycled. **83**

Value
Great for the (very little) money. **86**

Cooling
Two fans at stock? Nice. **81**

Features
A little bare, but USB3 and tool-less design. **82**

Overall
For budget cases, this is definitely The One (...damn!).

84%
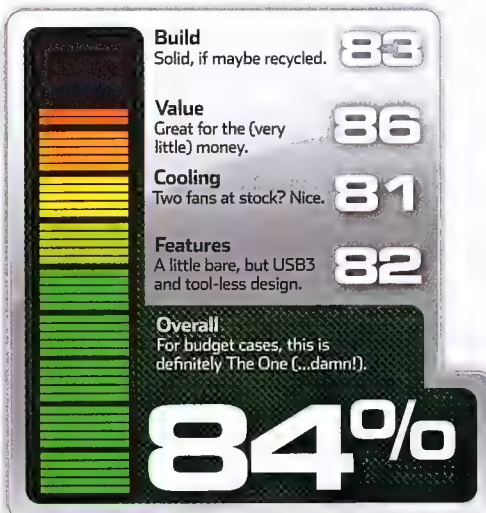
Mother
OF ALL boards

Matt Wilson dives head first into the Z77 chipset, testing a bunch of boards – it's survival of the fittest.

Intel launched Ivy Bridge this month, and in preparation for that, all major motherboard manufacturers now have at least one Z77 offering on the market. We've rounded up some of the more popular product lines from GIGABYTE, ASUS and ASRock in order to find the best board for you. We originally planned on including MSI, but that fell through as it could not provide products in time for review.

Before we get stuck in, let's go over the benefits of Z77 over Z68, and why you should consider the upgrade from a previous platform, or why you should stick with what you already have.

One of the most talked-about reasons to move over to Ivy Bridge in the overclocking community is the new technology from Lucid, exclusive to Ivy Bridge, known as MVP. Essentially, this technology (like Virtu before it) lets you assign certain tasks to the integrated GPU or the dedicated GPU, depending on your preference. The difference with Virtu MVP, however, is for the first time you can now pair your iGPU and external GPU in an ad-hoc multi-GPU solution.

If you prefer benchmarks to gaming, MVP can boost your scores dramatically, and as it stands has not yet been disqualified from HWBot. This means if you want any chance of taking a record with a single GPU from this day forward, you will likely need to do it with Ivy Bridge and Lucid MVP.

But that's all moot without a motherboard: so let's get right into the thick of it and make our pick of the best Z77 motherboard.
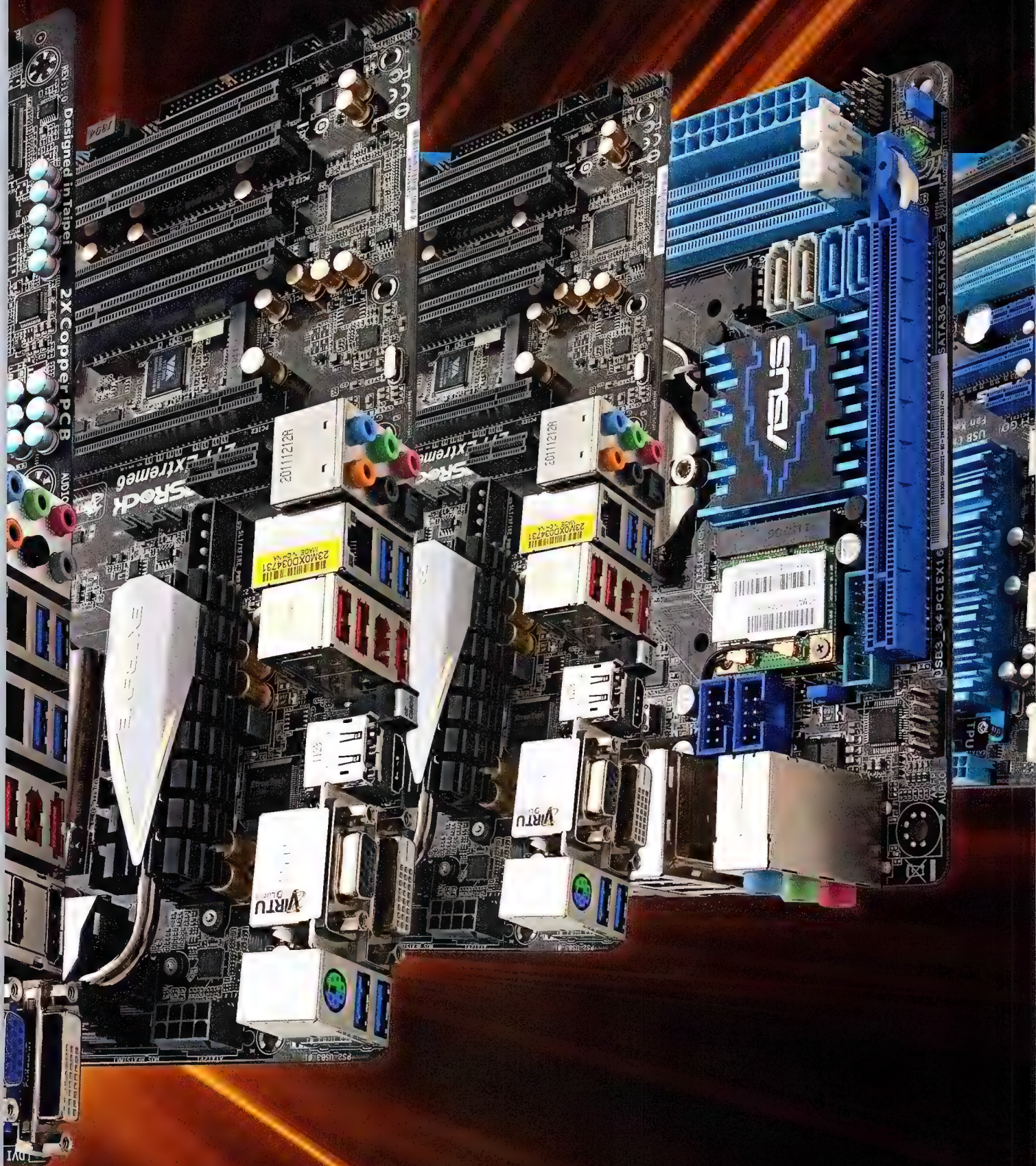
Specifications table

	ASRock Z77 Extreme 6	ASUS P8-Z77 V-Pro	GIGABYTE G1.Sniper M3	ASUS Maximus V GENE	GIGABYTE Z77X-UD3H	GIGABYTE Z77X-UD5H	ASUS P8Z77 I-Deluxe
Street Price ($)	$209	$209	$219	$289	$189	$289	$249
Product Page	www.atomicmpc.com.au/137_Extreme6	www.atomicmpc.com.au/137_P8Z77V_PRO	www.atomicmpc.com.au/137_G1_Sniper_M3	www.atomicmpc.com.au/137_Maximus_V_GENE	www.atomicmpc.com.au/137_Z77X_UD3H	www.atomicmpc.com.au/137_Z77X_UD5H	www.atomicmpc.com.au/137_P8Z77_Deluxe
Motherboard Specs							
Socket Type	LGA1155	LGA1155	LGA1155	LGA1155	LGA1155	LGA1155	LGA1155
Form Factor	ATX	ATX	m-ATX	m-ATX	ATX	ATX	m-ITX
Memory Support	4x DDR3, 2800MHz, 32GB	4x DDR3, 2600MHz, 32GB	4x DDR3, 2400MHz, 32GB	4x DDR3, 2800MHz, 32GB	4x DDR3, 2666MHz, 32GB	4x DDR3, 2400MHz, 32GB	2x DDR3, 2400MHz, 16GB
PCI-E 16x Slots	3 (16x, 8x, 4x)	3 (16x, 8x, 4x)	3 (16x, 8x, 4x)	2 (16x, 8x)	3 (16x, 8x, 4x)	3 (16x, 8x, 4x)	1 (16x)
PCI-E 4x Slots	0	0	0	1	0	0	0
PCI-E 1x Slots	1	2	1	1 (mini)	3	3	0
Legacy PCI Slots	2	2	0	0	1	1	0
Features							
SATA 2.0 / 3.0	4 / 4	4 / 4	3 / 2	2 / 4	4 / 4	4 / 5	2 / 2
USB 2.0 / 3.0	8 / 6	10 / 8	10 / 4	8 / 6	6 / 8	6 / 10	8 / 6
Audio Processor	Realtek ALC898	Realtek ALC892	Creative CA0132	Creative SupremeFX III	Via VT2021	Realtek ALC898	Realtek ALC898
Accessories	4x SATA cables, Front USB 3.0 Panel, SLI bridge	4x SATA cables, Wi-Fi GO! Card, SLI Bridge	Unknown	6x SATA cables, SLI Bridge	Unknown	Unknown	4x SATA cables, Wi-Fi GO!
Display Connectivity	DisplayPort, HDMI, DVI, VGA	DisplayPort, HDMI, DVI, VGA	DisplayPort, HDMI, DVI, VGA	DisplayPort, HDMI	DisplayPort, HDMI, DVI, VGA	DisplayPort, HDMI, DVI, VGA	DisplayPort, HDMI, DVI

ASRock Z77 Extreme 6
Price and performance meet.

Street Price $209
Website www.atomicmpc.com.au/137_Extreme6
Specifications LGA1155; Z77 chipset; ATX form factor; 3x PCI-e 16x (1 x 16x, 1 x 8x 1x4); 1 x PCI-e 1x, 2 x PCI; 4 x SATA2, 4 x SATA3; DDR3-2800

The ASRock Z77 Extreme 6 board is an attractive board, the gold-on-grey heatsinks work, and the gold finish on the solid capacitors is a nice touch, but what about the actual board? Does it perform as well as the offerings from ASRock parent company ASUS?

The short answer is yes, and then some. In many of the benchmarks conducted, the ASRock board actually stands above the Z77 Pro from ASUS, which we must admit took us a little by surprise. The connectivity is fair, the spacing between PCI-E sockets is exactly how we would lay it out, and there is even a space for m-SATA storage should you want to install it.

The EFI BIOS is fairly intuitive, offering a bunch of advanced options for overclockers, while keeping a fairly simple layout for the newbies. We must admit, we didn't like the change from Analogue to Digital BIOS screens, though now we see that there really is a lot more information to be displayed, and it can make life easier when working with an unfamiliar system. In this case ASRock has made a nice BIOS screen, with plenty of controllability and information.
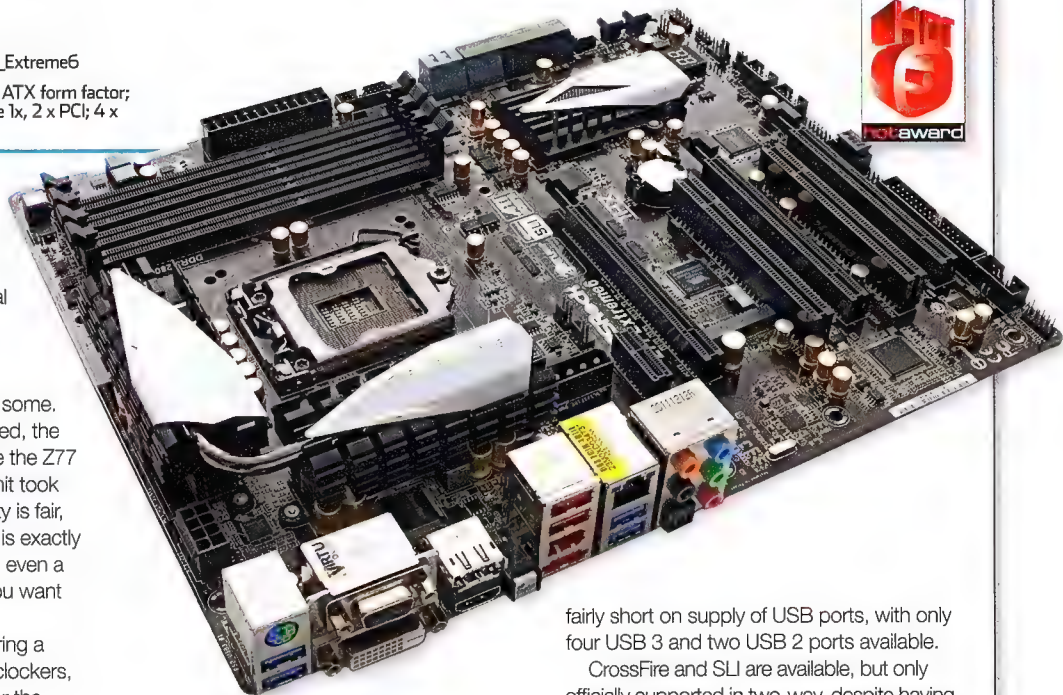
If you're not an overclocker by hobby, but still like the idea of extra performance for nothing, ASRock has pre-set overclocking profiles for you to enable. You can set anywhere from 4Ghz to 4.8GHz with an i7 3770K installed, giving you a healthy 500-1300MHz boost depending on which you choose.

On-board we find plenty of fan headers (six in total), a USB3 internal connector, reset and power buttons plus an extra molex power connector for PCI-E graphics stability. This will allow open-bench users to overclock on this board easily while connecting enough fans to keep it all cool.

Unfortunately, the heatsink covering the top VRMs is rather tall on this motherboard; it's the only real problem we can find. Some coolers may have issues fitting correctly, and for this reason we would suggest water cooling if you plan on using this board, either custom or a compact loop from one of the many manufacturers now producing them.

DisplayPort, HDMI, DVI and VGA ports are included on the rear IO panel, along with a clear CMOS button. Due to these, and the inclusion of 7.1 surround sound, the board is fairly short on supply of USB ports, with only four USB 3 and two USB 2 ports available.

CrossFire and SLI are available, but only officially supported in two-way, despite having three PCI-E slots. Not that this is an issue for the cast majority of users, as three-way cards are almost exclusively reserved for the independently wealthy or the completely insane.

Overall the Extreme 6 offered by ASRock is a solid choice, and one that is very hard to fault. The only question left is warranty and cost, something that can be more important than the performance of the product itself. In Australia the price is currently $209 from reputable online retailers, which is actually more than reasonable considering the performance offered. As for warranty, it sits at three years offered, and that is above the industry average. A very good choice.

i7 3770K	Stock 35 x 100; DDR3-1333 @ 9-9-9-24 1T	Automatic Overclock 42 x 100.5; DDR3-1340 @ 9-9-9-24 1T
PiFast (seconds)	18.71	17.86
wPrime 32M – Single-thread (seconds)	35.552	32.968
wPrime 32M – Multi-thread (seconds)	8.392	7.130
CineBench R11.5 x64 – Single-thread	1.61	1.76
CineBench R11.5 x64 – Multi-thread	7.12	7.28
AIDA Read (MB/s)	17488	19399
AIDA Write (MB/s)	23413	23215
AIDA Latency (nanoseconds)	32.2	30.0

Performance Fast, but not the fastest. **91**
Bundle All essentials included. **95**
Value Hard to get more for less. **97**
Build If the heatsinks were shorter, would be perfect. **95**
Overall Very close to perfect for the price. **95%**

ASUS P8-Z77 V-Pro

Nice software inclusions and some weird hardware choices.

Street Price $209
Website www.atomicmpc.com.au/137_P8Z77V_PRO
Specifications LGA1155; Z77 chipset; ATX form factor; 3x PCI-e 16x (1 x 16x, 1 x 8x 1x4); 2 x PCI-e 1x, 2 x PCI; 4 x SATA2, 4 x SATA3; DDR3-2800

It's not too hard to compare the Z77 Pro from ASUS to the ASRock Extreme 6; in fact, they are nearly identical – even the price is the same. There are however, a few very subtle differences, the first of which is the removal of the clear CMOS button on the rear IO panel. This has been replaced by a 15-pin connector. What is the connector for? It's for a wireless card. Finally, no more squeezing a PCI card in between two graphics cards, a sound card and of course your dedicated RAID – huzzah!

Another feature that's been removed is the m-SATA, which to be perfectly honest we find very strange. Instead it has been replaced with a single PCI-E 1x slot; a particularly useless choice, usually filling the empty space between PCI-E 8x and 16x slots. We can't imagine why ASUS went for a second PCI-E 1x slot over an m-SATA connector, but hey, we've seen weirder decisions in the past.

The ASUS V-PRO also has one less fan header; instead it has been replaced with two switches – one for EPU and the other for TPU. The switches work as a manual disable for these technologies, if getting into the BIOS seems like too much effort. These are power saving technologies and mainly implemented to increase the power efficiency of the board, though for any serious overclockers out there, you will want to flick these switches off when you break out the LN2.

The rear IO panel suffers the same affliction as most Z77 boards we've seen to date, and that is four display outputs occupying much of the real estate available on the back panel. Optical, DisplayPort, DVI, HDMI and VGA are all available outputs, along with 5.1 digital surround.

ASUS has also been hard at work creating a new software package, home to a plethora of useful features. "USB 3 Boost" is one of the main stars, allowing users to take advantage of UASP protocol, essentially creating larger packets or commands at once, compared to the slower single command BOT system. This means UASP-compatible devices see significant speed increases, while non-compatible devices see a smaller gain, though a gain nonetheless.

The second interesting piece of software developed by ASUS is Fan Xpert 2. As you can likely guess from the name, this is an updated and improved version of Fan Xpert 1. The software lets you monitor and control the temperatures inside your case, and adjust fan speeds and profiles accordingly. Very handy for anyone concerned about optimising their airflow, reducing heat pockets, and making sure their PC is not unnecessarily noisy.

For the overclockers out there, this board is not a bad performer, in fact it comes with some pre-loaded profiles. Kicking the board up to 4.2 GHz is as simple as a single mouse click, and it even overclocks your RAM too! Our 3770K was taken to 4.2GHz, and our RAM was taken all the way to 2200MHz without the need to enable XMP.

The heatsink around the CPU socket sits a little lower than the ASRock Extreme 6, which is definitely a good thing, in fact, it only sits around 1.5mm higher than the RAM sockets, so interference is very unlikely. Good news for those still hanging on to their Megahalems, and refusing to move over to a smaller air cooler, or compact water cooling.

i7 3770K	Stock 35 x 100; DDR3-1333 @ 9-9-9-241T	Automatic Overclock 42 x 100.5; DDR3-2200 @ 10-10-10-311T
PiFast (seconds)	19.14	17.10
wPrime 32M – Single-thread (seconds)	35.633	32.585
wPrime 32M – Multi-thread (seconds)	8.078	5.956
CineBench R11.5 x64 – Single-thread	1.56	1.73
CineBench R11.5 x64 – Multi-thread	6.47	7.43
AIDA Read (MB/s)	18659	25037
AIDA Write (MB/s)	22860	34040
AIDA Latency (nanoseconds)	29.9	27.2

Performance A little slower than others. **83**

Bundle Good software package included. **93**

Value Pretty fantastic really. **92**

Build If only it had an m-SATA. **89**

Overall A competitive offering to say the least.

89%

GIGABYTE G1.Sniper M3

A stellar m-ATX board that's set to headshot the competition.

Street Price $219
Website www.atomicmpc.com.au/137_G1_Sniper_M3
Specifications LGA1155; Z77 chipset; m-ATX form factor; 3x PCI-e 16x (1 x 16x, 1 x 8x 1x4); 2 x PCI-e 1x; 2 x SATA2, 2 x SATA3; DDR3-2800

It's about time GIGABYTE started making a motherboard to compete with the ASUS GENE. m-ATX is growing in popularity, and rightfully so. m-ATX can house every feature a gamer needs and more: multi GPU, enthusiast sound quality, Intel LAN, four RAM slots, as many external connections as the full sized ATX boards possess; and sometimes even more.

The G1.Sniper M3 is probably our favourite board out of this round up. Not just because it's something new for GIGABYTE, but because it's better value than what is already out there. GIGABYTE offers many of the features ASUS offers with the GENE, and some different ones, for around $70 less. Not a bad saving at all.

The top PCI-e slot is spaced well, allowing room to breathe. In fact, you can fit two dual slot video cards in easily, and even have the freedom to install a triple slot cooler on the top PCI-e slot, with a dual slot card occupying the bottom slot. Of course this assumes you have a single PCI-E slot spare space in your case or more, so not all m-ATX cases will support that setup, though it is nice that GIGABYTE has done everything it can to make multi-GPU setups on m-ATX easier.

Overclocking is relatively simple; in fact it's exactly the same as overclocking on any other GIGABYTE board on Sandy Bridge or Ivy Bridge, though unfortunately there is no automatic overclocking function on this motherboard. You're on your own if you want to get some free performance. Luckily enough, Ivy Bridge should boot on 4.2GHz using stock voltage, so it's as simple as changing the CPU multiplier from 35 to 42. Some may even go to

4.4GHz using stock voltage.

There are four fan headers included on the board, which to be honest should be more than enough to cool your average m-ATX case. We also find internal USB headers, for both USB 2 and USB 3, along with a "USB charge" header, which receives power even when your PC is powered down.

Video outputs are VGA, DVI, HDMI and Display Port. Audio output is 5.1, with the addition of Digital out. Four USB 2 are included on the rear IO panel along with two USB 3 ports, giving you the same USB connectivity as most other Z77 boards on the market. If you want more, a Z68 board won't have the video outputs, and therefore will have more USB connectivity instead.

The heatsinks around the CPU are minimalist, which should free up the precious room required for large air coolers on a board of this size. The one area where GIGABYTE has cut back on the design of the Sniper

M3, however, is the SATA connections; only two SATA 3 ports, and two SATA 2 ports are provided. This shouldn't be a problem for most m-ATX users, though if you planned on using this board along with a lot of hard drives, you're going to be better off with the full ATX G.1 Sniper.

As for the price tag of $219, we think it's fair. Sure, you can get some pretty good full ATX options for around the same price, and even $10 less, but that's not really important. What is important is comparing this board to other m-ATX boards, and when you do that you will quickly realise just how much value GIGABYTE has packed in here. The GENE is nice, but hot damn, it's expensive. There are mainstream m-AXT boards, but their multi-GPU solutions are limited, along with sound and LAN, something important to most gamers. The fact is, GIGABYTE has included the gaming essentials, to deliver a true m-ATX gaming board.
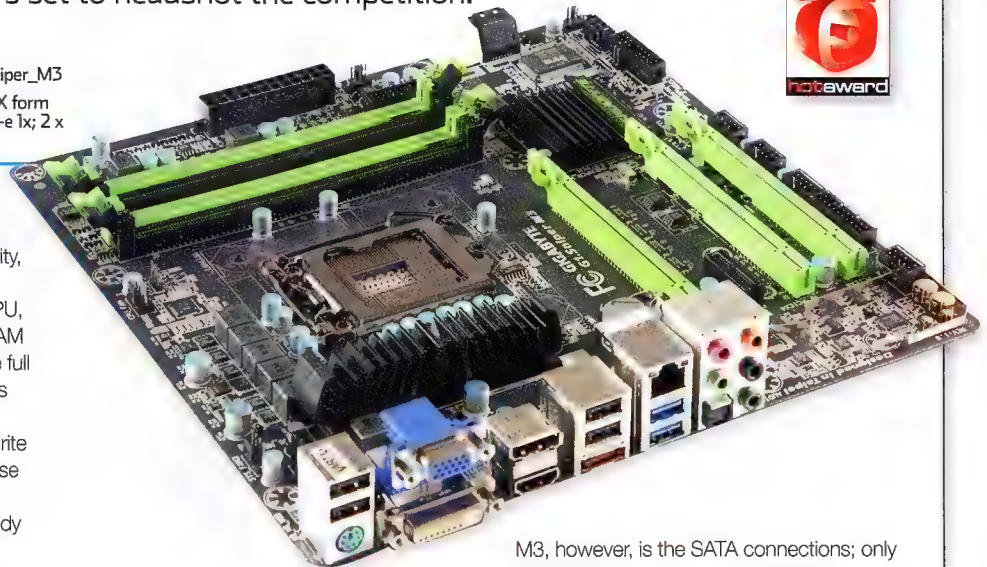
i7 3770K	Stock 35 x 100; DDR3-1333 @ 9-9-9-24 1T	Automatic Overclock 42 x 100; DDR3-1600 @ 9-9-9-24 1T
PiFast (seconds)	19.11	17.19
wPrime 32M – Single-thread (seconds)	35.491	32.509
wPrime 32M – Multi-thread (seconds)	8.034	6.879
CineBench R11.5 x64 – Single-thread	1.59	1.77
CineBench R11.5 x64 – Multi-thread	7.33	7.45
AIDA Read (MB/s)	18180	20863
AIDA Write (MB/s)	22322	25796
AIDA Latency (nanoseconds)	29.4	26.1

Performance Very efficient board — 94

Bundle Comes with some extras in the box — 95

Value Not much more you could ask for, except more SATA. — 98

Build Very hard to fault — 99

Overall Another great value choice — **97%**
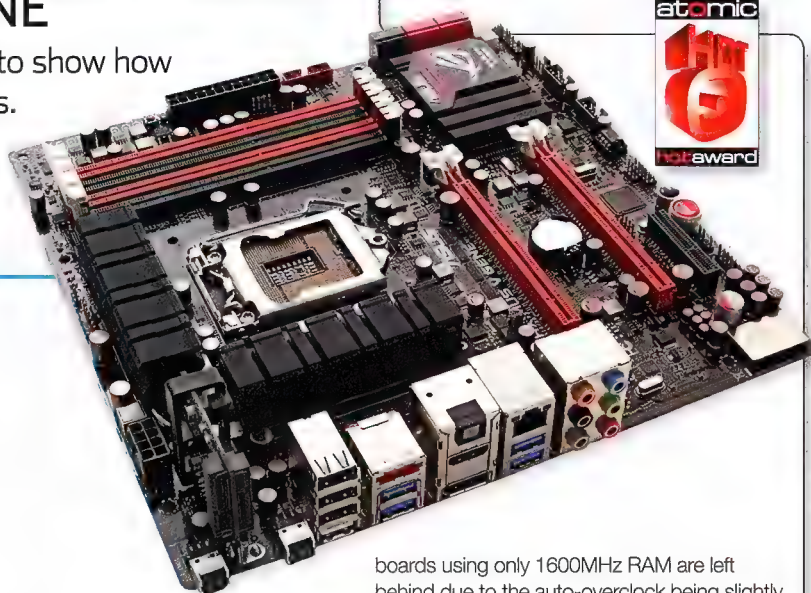
ASUS Maximus V GENE

There's nothing like Roman numerals to show how technologically advanced something is.

Street Price $289
Website www.atomicmpc.com.au/137_Maximus_V_GENE
Specifications LGA1155; Z77 chipset; m-ATX form factor; 2x PCI-e 16x (1 x 16x, 1 x 8x); 1 x PCI-e 1x; 2 x SATA2, 4 x SATA3; DDR3-2800

The ASUS GENE isn't a new board, in fact, this is the fifth board in the series (hence the roman V). With experience comes, well, experience, and ASUS have plenty of that in the gaming m-ATX market. In fact, they pretty much created the market with ROG all those years ago.

Technologies like "Game First" make the ROG brand unique, offering gamers the freedom to prioritise their network traffic allocation with software. This ensures that when you are gaming, your PC will prioritise that, and everything else comes second, including software updates and Virus Scans.

There's a dual heatsink design around hte CPU socket, with single heatpipe connecting the setup, surrounded in turn by a 8+4+2 digital phase power design. Spread out all over the motherboard are 10K black capacitors, which offer, supposedly, up to 20% better thermal endurance – ASUS claims these caps offer up to 10,000 hours of operation at 105C (compared to industry-standard 25C over ambient).

When we take a look at the PCI-E slots, it's worth mentioning that they are not spaced the same as the Sniper M3 from GIGABYTE. If you install a triple slot card on the top lane, it will block the second – which we find weird, given ASUS is one of the only producers of triple slot video cards. Both slots run at x8/x8 when paired up in SLI and CrossFire, the same as all Z77 chipset motherboards.

On the rear of the motherboard we find a clear CMOS button, mini PCI-E (for WiFi or other options), ROG connect, four USB 2 ports, two USB 3 ports, Optical out, HDMI and Display port and 7.1 surround sound. It seems ASUS removed the DVI and VGA outputs in favour of their other ROG features, something we very much agree with.

Audio is powered by Supreme FX III, which is an extremely powerful and versatile chip. It's a solid choice for gamers, and is completely controllable though various audio software, so setting it up with your speakers or headphones shouldn't be a hassle.

When overclocking you have two options: manual or preset profiles. We set the motherboard to its 4.2GHz profile, which also overclocked the RAM to 2200MHz. If you want to have your kit run faster, you can enable XMP as always, and the profile will still remain unchanged for CPU overclocks. For our testing we just let each board load its custom profiles, as people overclocking manually usually know what they are doing and can overclock their RAM accordingly. Our kit used for testing was Team Xtreem's 2600MHz, so the system did not run XMP for us, and simply applied a fairly high, yet stable overclock automatically. This is reflected in some benchmarks, where other boards using only 1600MHz RAM are left behind due to the auto-overclock being slightly less intelligent or complex.

Feature-wise the Maximus V GENE is laden with useful resources and tools. is a feature We've looked at earlier USB 3.0 Turbo Boost in this Head2Head, and it's pretty neat. There's almost too much cool stuff to cover; "ASUS Flashback BIOS" is another great one, which lets you flash the BIOS without needing to boot the system or even have anything installed into the board. All you need is PSU, the BIOS on a handy-dandy USB stick (and shouldn't we all have a mess of those!) and BAM! Your BIOS is ready to be flashed.

Overall this board is fantastic, with a few weak points compared to the new GIGABYTE competition, but also some strengths and extra goodies that you miss out on if you go with GIGABYTE. It will come down to your needs at the end of the day, and if you are only using a single video card, then the ASUS probably just comes out on top; that being said, the Sniper M3 is $80 less.

i7 3770K	Stock 35 x 100; DDR3-1333 @ 9-9-9-24 1T	Automatic Overclock 42 x 100.5; DDR3-2200 @ 10-10-10-31 1T
PiFast (seconds)	19.08	17.01
wPrime 32M – Single-thread (seconds)	35.146	31.497
wPrime 32M – Multi-thread (seconds)	7.981	5.942
CineBench R11.5 x64 – Single-thread	1.59	1.81
CineBench R11.5 x64 – Multi-thread	6.62	7.51
AIDA Read (MB/s)	18659	25037
AIDA Write (MB/s)	22860	34040
AIDA Latency (nanoseconds)	29.9	27.2

Performance
Nice and nippy.
94

Bundle
Everything you need.
97

Value
A little pricey.
85

Build
PCI-E layout isn't the best.
89

Overall
A nice board, but it's expensive.

91%

GIGABYTE Z77X-UD3H

Budget builder board extraordinaire.

Street Price $189
Website www.atomicmpc.com.au/137_Z77X_UD3H
Specifications LGA1155; Z77 chipset; ATX form factor; 3x PCI-e 16x (1 x 16x, 1 x 8x, 1 x 4x); 3 x PCI-e 1x; 4 x SATA2, 2 x SATA3; DDR3-2800

The UD3 has been a long-time favourite of overclockers, gamers and even mainstream consumers in Australia. It has a large feature list, GIGABYTE's famous build quality, a three year warranty and, most importantly of all, a fair price. It is very hard to go past the UD3, whether it be the H, R or P variation.

For anyone familiar with the Z68 UD3H, we'll be perfectly honest: extremely little has changed. But is this a bad thing? Why mess with a winning formula? If the only changes are the addition of PCI-E gen 3, native SATA and USB 3 and support for Lucid Virtu MVP then we're more than happy. Throw in the fact this board should retail for around $15 less than the Z68 variant and you have yourself a win-win situation.

There are a few people who would like to throw mud at GIGABYTE, and after a viral video a month or two back, people were up in arms about the "poor quality" of the UD3 series. GIGABYTE proved the nay-sayers wrong, by taking a world record on the UD3. That's right, they beat their own UD7, OC boards, ASUS Rampage and MSI Big Bang with a motherboard that costs – in some cases – less than a third of the price. GIGABYTE maintains the same level of quality throughout its entire lineup, and it shows with the UD3.

GIGABYTE's done a great job with this motherboard; it features all digital power, Dual UEFI 3D BIOS for performance tuning. Sadly, GIGABYTE doesn't include pre-set overclocking profiles with the board – in this case it's being left to the experts – but at least there's EZ Tune.

This is a software kit designed purely for easy overclocking. You can create custom settings and profiles, learning as you go, or simply apply settings GIGABYTE have determined safe and stable for similar systems. On our i7 3770K a 4.2GHz was applied, along with 1600MHz on the RAM.

On the rear of the board we find DVI, VGA, Display Port and HDMI; along with all the other stuff we talked about in the Sniper M3 review. Put simply, it's pretty much the same as every other Z77 board on the market, with nothing extra flashy increasing the build cost.

Good spacing between the PCI-E ports ensures your video cards will remain nice and cool should you opt for a multi-GPU solution. And if not, there is plenty of space left for other PCI devices. GIGABYTE has included a power button, along with an on-board diagnosis LED. This will help troubleshooting should you encounter hardware problems in your system

build, and is not a common find on a board under $200. The addition of the m-SATA slot is also nice.

Overall the UD3H is pretty decent value, though we feel it should be cheaper still. The Z68XP-UD3R costs $149, and the Z77 chipset should cost a little less if we're not mistaken. This means the current "early adopter" tax could be in place here, and it may be worth waiting for the Z77 prices to fall, or if Z77 features aren't of interest to you, perhaps just pick up a Z68-UD3 instead.
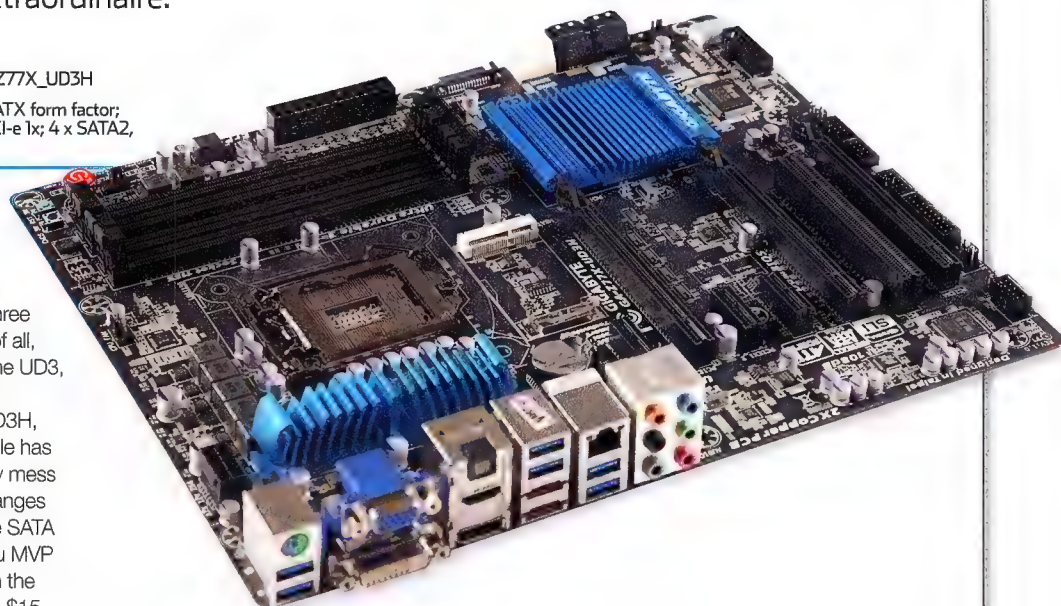
i7 3770K	Stock 35 x 100; DDR3-1333 @ 9-9-9-24 1T	Automatic Overclock 42 x 100; DDR3-1600 @ 9-9-9-24 1T
PiFast (seconds)	19.18	17.41
wPrime 32M – Single-thread (seconds)	35.316	31.567
wPrime 32M – Multi-thread (seconds)	8.146	5.942
CineBench R11.5 x64 – Single-thread	1.52	1.71
CineBench R11.5 x64 – Multi-thread	6.56	7.44
AIDA Read (MB/s)	18219	20663
AIDA Write (MB/s)	22632	24921
AIDA Latency (nanoseconds)	30.1	27.1

Performance Around what you'd expect. **89**

Bundle The bare essentials. **85**

Value It's a fair price, though it could be cheaper. **86**

Build Top notch. **95**

Overall Z68 could be a better buy.

88%

GIGABYTE Z77X-UD5H

For those who enjoy paying more for little gain.

Street Price $289
Website www.atomicmpc.com.au/137_Z77X_UD5H
Specifications LGA1155; Z77 chipset; ATX form factor; 3x PCI-e 16x (1 x 16x, 1 x 8x, 1 x 4x); 3 x PCI-e 1x; 1 x PCI; 4 x SATA2, 2 x SATA3; DDR3-2800

The first thing that should be mentioned is that at the time of writing there is no UD7 board available, and as far as we're aware, it isn't coming any time in the immediate future. This means the UD5 is GIGABYTE's premium offering on with the Z77 chipset (before the Sniper 2).

The differences between the UD5 and UD3 are few, most of which come down to the PWM. This means if you're an overclocker by nature, you may consider the $100 price hike over the UD3 justified, though if you only use air cooling, you will likely be more than fine sticking with the simpler model.

In the past the UD5 offered 3-way SLI support, while the UD3 only offered CrossFire and SLI in 2-way. This is no longer the case, with both boards having the exact same PCI-E configuration, leaving us slightly confused where GIGABYTE find the justification for the price of their UD5.

BIOS is essentially the same as UD3, and from what we could tell there was no discernable difference – even in RAM timings. So again, we're left wondering what the difference is between the two, and why it is worth upgrading to the UD5.

There is also a WiFi version of the board available, and the same is also said for the Z77-UD3H. The only difference is a WiFi card which fits into any PCI-E 1x port. At $30 more than the regular model, it's essentially the same as just buying your own WiFi card, though strangely it is limited to 150Mbps on Wireless-N. It is however a useful purchase as short 1x cards can be harder to come by.
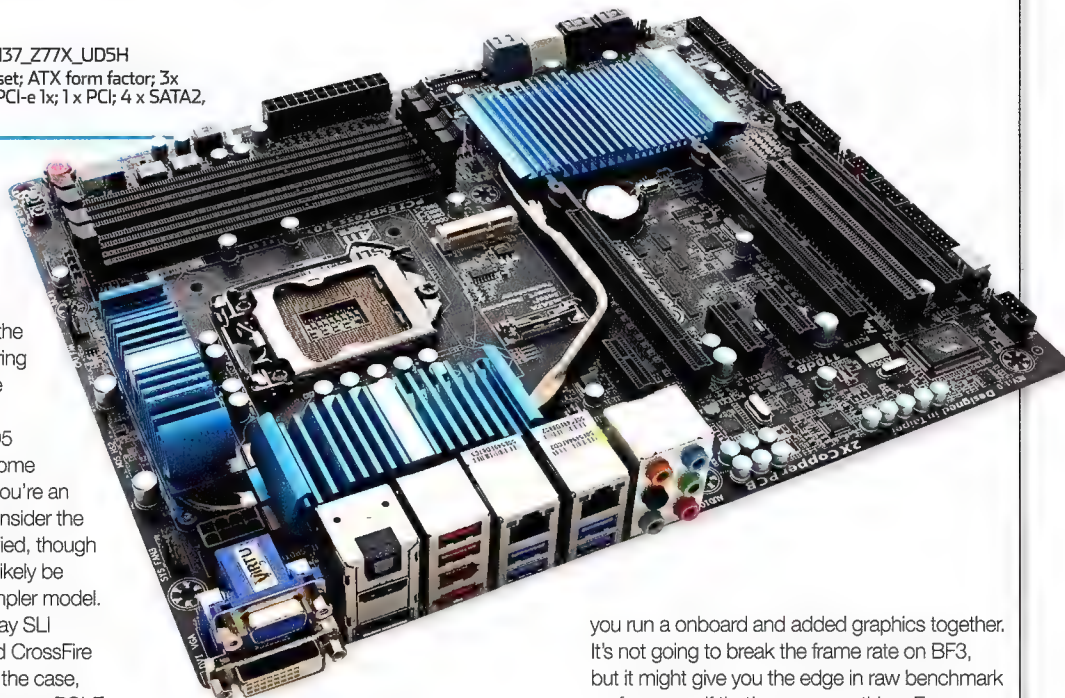
Compared to the Z68 model at $289, the Z68X-UD5H comes in at $259. For this reason alone the value doesn't appear too bad. If MVP and on-board video options are important to you the $30 extra could be worth moving to Z77, if these technologies don't matter to you, then perhaps Z68 is all you need.

One of the great things about the UD5H is how friendly it is. The BIOS is a breeze, with GIGABYTE's usual Dual-BIOS; you can go nuts with the overclocking and if it all falls over, recovery is a pretty simple affair – try that on a UEFI BIOS! The friendliness continues in terms of connectivity, as well; there's a metric (possibly Imperial...) tonne of SATA connections, not to mention USB ports, and as in other boards on test, there's the Lucid MVP chip, which will let you run a onboard and added graphics together. It's not going to break the frame rate on BF3, but it might give you the edge in raw benchmark performance if that's more your thing. Every little bit helps, and HWBOT hasn't made it a verboten option yet – get in while you can!

We just can't emphasise enough that the only thing you're getting for your money is a more advanced VRM/PWM. So again, if you're only overclocking on air or water, this board is simply not necessary. By all means you can buy it to pump up your e-peen, but air overclocking on the UD3 is a far better value purchase in our opinion. On the other hand, if you're an avid overclocker, and want one of the best boards available for Z77, this could be for you.

i7 3770K	Stock 35 x 100; DDR3-1333 @ 9-9-9-24 1T	Automatic Overclock 42 x 100; DDR3-1600 @ 9-9-9-24 1T
PiFast (seconds)	19.16	17.42
wPrime 32M – Single-thread (seconds)	35.320	31.560
wPrime 32M – Multi-thread (seconds)	8.143	5.951
CineBench R11.5 x64 – Single-thread	1.53	1.70
CineBench R11.5 x64 – Multi-thread	6.57	7.42
AIDA Read (MB/s)	18115	20663
AIDA Write (MB/s)	22567	24998
AIDA Latency (nanoseconds)	29.8	27.0

Performance Overclocking headroom. **92**

Bundle The basics, though WiFi is available. **90**

Value It's too expensive. **78**

Build Top notch. **97**

Overall Good for heavy overclockers.

85%

ASUS P8Z77 I-Deluxe

Great things come in small packages.

Street Price $249
Website www.atomicmpc.com.au/137_P8Z77_Deluxe
Specifications LGA1155; Z77 chipset; ITX form factor; 1x PCI-e 16x (1 x 16x); 2 x SATA2, 2 x SATA3; DDR3-2400+

It's pretty rare to see an ITX product so close to a chipset launch date. Luckily for us, it appears this board isn't just a rush job either: in fact, this board looks awesome.

ASUS have been hard at work creating one of the coolest ITX boards we've ever seen. It comes with literally everything you need to make a miniature gaming rig. Room for four hard drives, 16GB of RAM, eight USB devices and it even comes with dual-band WiFi A/B/N, meaning the only PCI-E device needed is a TV tuner card or video card depending on the machine's purpose.

Decent clearance around the CPU socket is possible if you use low profile RAM, meaning a good cooling tower can be used on the CPU (assuming it will fit in your ITX case). The VRM daughterboard that sits perpendicular to the main board, above the CPU socket, may cause problems with excessively large air coolers. We advise that it's worth researching thoroughly before buying a suitable cooler.

Overclocking proved to be the same as other boards, offering the same level of control you would expect on a full sized ATX board. Reaching 4.2GHz on stock volts wasn't an issue, and the RAM clock is capable of 2400MHz, essentially making this board a fully-fledged enthusiast product.

We weren't able to build this board into an ITX case, so we can't say for certain how easy or difficult it will be to work with, though we did take some short notes. The flat-laying SATA ports may be hard to work around once your video card is installed. You will also want to connect your USB, Audio and front panel before the card for the same reason, as once the video card is installed on this board, it is virtually impossible to access anything. Even removing the ram is difficult!

Audio on this board isn't the same as the typical ASUS gear, coming with a simple Realtek audio controller. It's more than enough for movie watching on the TV and playing MP3s, so don't worry too much about it. If however you want better audio quality, you are fairly stuck, as there is only one PCI-E slot, and that will likely be occupied by a video card, or TV tuner card. The option is there to use on-board video however (via HDMI or Display Port), if audio is a higher priority for you. Or just go an external sound processor and call it done.

It is rather hard to find a fault with this board; perhaps the VRM didn't need to be so big, and they could have just stuck with a simple solution with crippled overclocking; though for Atomic readers, we think it's perfect. Who doesn't

want a shoe-box gaming rig with overclocking headroom?

The price is a little steep, but that is perfectly normal for ITX. In fact, this board is incredibly cheap compared to most ITX offerings, and considering the features and technology bundled in here, we would go as far as saying this board is exceptional value for the ITX market. Sure, building an ATX PC is cheaper, but that has always been the case. If you want a small PC, it really doesn't get any better than this motherboard. Buy it.

i7 3770K	Stock 35 x 100; DDR3-1333 @9-9-9-24 1T	Automatic Overclock 42 x 100; DDR3-1600 @9-9-9-24 1T
PiFast (seconds)	19.25	17.73
wPrime 32M – Single-thread (seconds)	35.948	32.862
wPrime 32M – Multi-thread (seconds)	8.137	6.106
CineBench R11.5 x64 – Single-thread	1.52	1.68
CineBench R11.5 x64 – Multi-thread	6.41	7.36
AIDA Read (MB/s)	18659	24237
AIDA Write (MB/s)	22860	23149
AIDA Latency (nanoseconds)	29.9	27.6

Performance Bloody good for an ITX. **95**

Bundle Comes with everything you can fit. **90**

Value We challenge you to find better. **98**

**Build** Stack SATA is nicer to work with. **98**

Overall The only board to own for ITX. **95%**

KITLOG

These are four of our basic systems, with something for every taste. **The Game Box** is put together with money-saving in mind, but also an eye to getting as much bang for buck. Our build may be a little more expensive than what you could technically get away with, but for that extra few hundred you're also getting cutting edge performance and one of the most overclockable chips you can get today.

The process of putting a PC together is relatively simple, and almost anyone can do it. The hard part, as many will ultimately discover through trial and error, is getting a good rig at the end of it. Builds featured here are a great starting point for any user; but we always recommend customising for your particular needs. There's no point cramming a fast GPU in if you never play games!
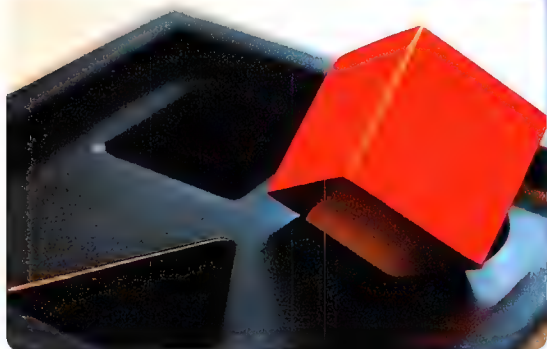
The Perfect PC, on the other hand, is the system everyone aspires to, with nothing but the best parts – without going crazy, though. It's a collection of all the greatest hardware that we'd pick without a budget, sure to impress with performance and sheer style.

Oh, and if you're wondering what the Ref IDs are, that's the ID of that article on our website. Just enter it like this – **www.atomicmpc.com.au/?NUMBER** – and you'll go straight to that review.

THE GAME BOX

CPU
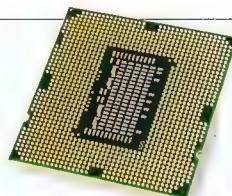
Intel Core i5 2500-K
PRICE $220

Sandy Bridge's combination of cost and overlocking prowess is awesome.
Issue 122, Page 36

MOTHERBOARD

Gigabyte Z68X-UD3H-B3
PRICE $170

Affordable gaming performance and features.
Ref ID: 263631
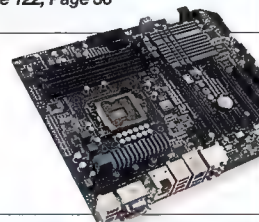
MEMORY

G.Skill Ripjaws F3-12800CL9D-8GBXL
PRICE $55

Great value, decent perfomance, and some flexibility.

VIDEO CARD
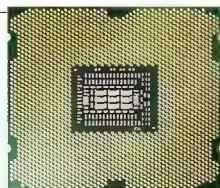
GIGABYTE HD6870 OC
PRICE $205

The HD7870 is just around the corner, 6870s are now on sale.

THE PERFECT PC
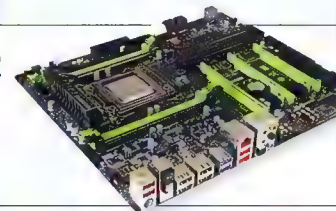
CPU

Intel Core i7 3930K
PRICE $640

Six cores of Sandy Bridge-E loving. Overclock for justice!
Issue 132, Page 32

MOTHERBOARD

Gigabyte G1.Assassin 2
PRICE $450

It's about as super-premium as you could get, or want.
Ref ID: 281856

MEMORY

Corsair Vengeance Low Profi CML16GX3M4A1600C9B
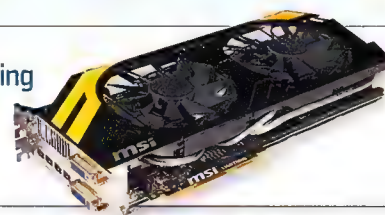PRICE $119

16GB of fast memory. Virtualise everything!

VIDEO CARD

MSI R7970 Lightning
PRICE $670

Great value, overclocks extremely well, super fast.
Issue 136, Page 53

SUBTOTAL: $1418
RIG ONLY: $959

COOLER

Coolermaster Hyper 212 Evo
PRICE $40
Nice cooling for a very affordable price.

CASE

Bitfenix Shinobi
PRICE $79
Worth it for the price alone, and sexy to boot.
Ref ID: 260177

SYSTEMDRIVES

2TB HDD
PRICE $90
Two thousand gigabyte storage drive on the cheap.

Pioneer DVR-219L
PRICE $35
Discs. You needs 'em.

KEYBOARD

Razer Arctosa
PRICE $50
A cool-looking keyboard that'll serve you very well.
Ref ID: 149483

DISPLAY

Samsung S24A450BW
PRICE $260
24 inches of LED backlit, 16:10 LCD screen. Sweet.

MOUSE

Corsair Vengeance M60
PRICE $69
Exceptional mousing value.
Issue 134, Page 49

AUDIO

Plantronics Gamecom 777
PRICE $80
Solid set of cans with great audio.
Issue 101, Page 41

Onboard Realtek ALC889A
A decent chip that does the job.

POWER SUPPLY

Silverstone Strider 500W
PRICE $65
A solid PSU, capable of powering much more.

SUBTOTAL: $5059
RIG ONLY: $3686
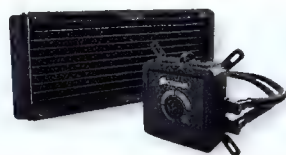
COOLER

Corsair H100 Water Cooler
PRICE $159
Fits perfectly in th Cosmos S II, mounting directly on the roof.

CASE

Cooler Master Cosmos II
PRICE $399
The only case you'll ever need. Premium luxurious bliss.
Ref ID: 290959

SYSTEMDRIVES

OCZ REvo Drive 3 x2 & WD 600GB VelociRaptor
PRICE $699 + $230
Superfast SSD with zippy storage.
WD: Ref ID: 220323
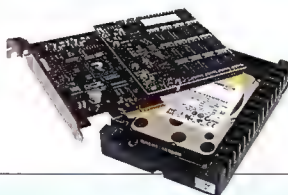
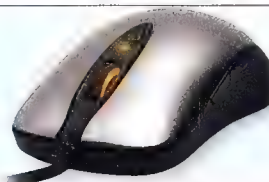**KEYBOARD**

Razer BlackWidow Ultimate
PRICE $160
The new benchmark in gaming quality.
Ref ID: 251095

DISPLAY

Dell U2711
PRICE $899
One of the best 27" monitors on the market. On sale regularly.

MOUSE

SteelSeries Sensei
PRICE $115
The best-performing mouse we've used to date!
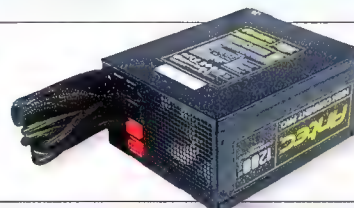*Ref ID: 276668*

AUDIO

Shure SRH-840
PRICE $199
The best value closed-ear studio headphones around

POWER SUPPLY

Antec HCP 1200W
PRICE $320
Plug in a graphics card. Or four. The HCP won't care.
Ref ID: 272588

The **LAN Rig**, the ultimate in portable gaming power – go anywhere, frag anyone. No longer will you be tied to a desk or forced to awkwardly manhandle your full-sized rig, helped by a convenient handle and beefy tech. Perfect for wowing people at LANs, the tech inside is fast enough to run any game, and boasts enough speed to keep your game running at full clip even if other programs intrude in the background. After all, no-one wants to miss a headshot.

There are times when a soundcard can't cut it for your audio desires, where your 600ohm headphones feel underpowered and you need more OOMPH. Thankfully there's a market to cater for you, and multiple Digital-Analogue-Converter/ Amplifier hybrids are on the market, such as the ASUS Essence One or Matrix Mini-I. They give much better audio quality, and the punch needed to enjoy music to its fullest. Only serious enthusiasts need apply.

Finally, for the more entertainment-minded – and really, that's all of us – there's **The Mini**, ready to play movies and music quietly and efficiently. The basic guts are fast enough for general tasks, and the IGP can handle High-Definition content. You can also choose from three entirely optional upgrades to suit your needs best: a graphics card for WoW, TV tuner to catch the game, or a Wireless card to sync without cables. The perfect energy-conscious build.

THE LAN RIG

CPU
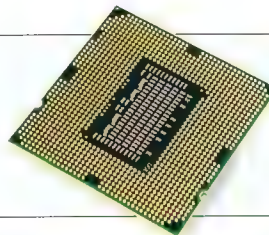
Intel Core i5 2310
PRICE $190
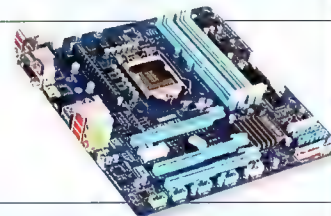
Intel's most affordable quad-core, overclocking limited.

MOTHERBOARD

GIGABYTE Z68MA-D2H-B3
PRICE $150

A mATX board with everything you need.

MEMORY

G.Skill Ripjaws F3-12800CL9D-8GBXL
PRICE $55

Great value, decent performance, and some flexibility.

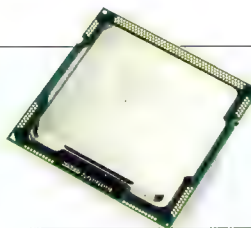**VIDEO CARD**

GIGABYTE HD6870 OC
PRICE $205

Keeping your LAN box cool and powerful.

THE MINI

CPU

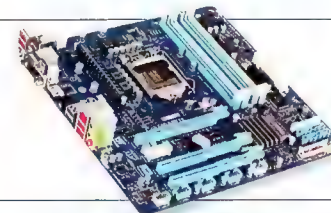### Intel Core i3 2120T
PRICE $150

Super low-heat dual-core processor with IGP.

MOTHERBOARD

GIGABYTE Z68MA-D2H-B3
PRICE $150

A mATX board with plenty of storage options.

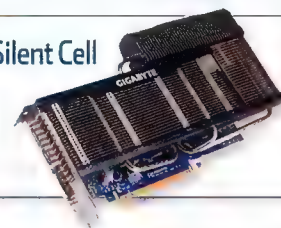**MEMORY**

Corsair XMS3 CMX4GX3M2A1600C9
PRICE $35

4GB of fast memory is plenty for running multiple HTPC media streaming apps.

VIDEO CARD

Gigabyte HD6770 1GB Silent Cell
PRICE $145

Enough to play games on, and adds outputs without extra noise.

SUBTOTAL: **$1319**
RIG ONLY: **$960**

COOLER

Antec Kuhler 620
PRICE $90

Show off your 1337 rig with watercooling. Aw yeah.

CASE

InWin Dragon Slayer
PRICE $80

Tiny case with great potential, it's got it where it counts.

SYSTEMDRIVES

2TB HDD
PRICE $90

Two thousand gigabyte storage drive on the cheap.

Pioneer DVR-219L
PRICE $35

Discs. You needs 'em.

KEYBOARD

Razer Arctosa
PRICE $50

A cool-looking keyboard that'll serve you very well.
Ref ID: 149483

DISPLAY

Samsung S23B300B
PRICE $160

23 inches of value-packed screen, great buy.

MOUSE

Corsair Vengeance M60
PRICE $69

Exceptional mousing value.
Issue 134, Page 49

AUDIO

Plantronics Gamecom 777
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A decent chip that does the job.
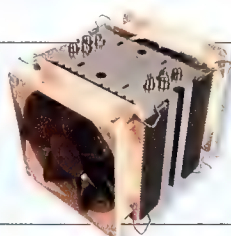
POWER SUPPLY

Silverstone Strider 500W
PRICE $65

A solid PSU, capable of powering much more.

SUBTOTAL: **$1535**
RIG (NO OPTIONS): **$1025**

COOLER

Noctua NH-U9B SE2
PRICE $65

Plenty of cooling, and quietness to boot.
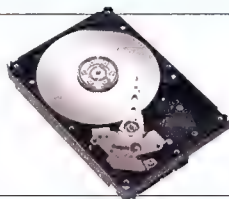
CASE

Silverstone Fortress FT03
PRICE $190

The best HTPC case we've seen yet, with space for plenty o' bits.

SYSTEMDRIVE

2TB HDD
PRICE $90

Buy three of these for super-crazy storage capacity.

COOLING

Scythe SFF21D
PRICE $30 x 3

Replace the stock fans and hear the computer no more.

OPTIONAL

OPTICAL

Silverstone SOD02B
PRICE $80

Slot-loading DVD drive for movies, installs or backups.

OPTIONAL

KEYBOARD

Logitech diNovo Edge
PRICE $240

Wireless board with a trackpad for mousing.

TV TUNER

Leadtek Winfast PxDVR3200 H
PRICE $100

Get TV in your PC. H.264 recording ftw!

OR

OPTIONAL

WIRELESS

ASUS PCE-N13
PRICE $45

Zippy 802.11N for wireless HD video streaming.

POWER SUPPLY

Seasonic X-460 Fanless
PRICE $200

"Look, ma, no fans!"
-Anonymous, 2011

A deadly mouse trap

Dan Rutter doesn't think that new mice are built better.

Herewith, I am pleased to present another of those "Things That Don't Bother You If You Don't Know About Them."

You're still going to keep reading, aren't you?

I thought it was probably time for a new mouse, you see. I've been using Microsoft IntelliMouse Explorer 3.0s since they were new and exciting, right around the time that the World Trade Center still existed. The IE 3.0 fits my (right) hand well and lasted for years of constant use, but it can only manage 400 counts per inch, making high speed and high precision mutually exclusive.

You may, as I was, be under the impression that what a mouse does is transfer the movement of your hand to a cursor, or a game character. Sure, there's cpi and sample rate and

of the mouse's sensor, it's not easy to move a mouse in good straight lines. In response to which, mouse-sensor companies invented prediction.

Prediction "angle-snaps" close-to-horizontal and close-to-vertical movements to a perfect horizontal or vertical line, and may do the same thing for other angles too. Different sensors do this with different amounts of enthusiasm.

(Mice and mouse sensors are a bit like monitors and LCD panels; there are a lot fewer models of sensor than there are models of mouse.)

Personally, I'm not sure that mice need prediction at all. Perhaps there's some benefit to having it for, say, the TrackPoint joystick on a ThinkPad, because you're probably not playing

If you've got a mouse with prediction, on the other hand, your scribblings will contain numerous strangely straight lines.

Mice with strong prediction do this in a very noticeable way, which isn't hard to see in real-world applications once you've learned this deadly truth and started looking for it. Mice with weak prediction do it so subtly that you could easily think you saw it in scribbles drawn with a predictionless mouse. I know I could easily think that, because I did think that, while scribbling with different mice and losing track of which one I was using.

The actual upshot of even quite strong angle snapping is usually not much. If you make your living playing Counter-Strike or StarCraft then you may care about it, but it is, again, one of those things that probably won't bother you if you don't know about it.

Dan plans to hold out for mind-interface devices.
dan@atomicmpc.com.au

Mice with strong prediction do this very noticeably, which isn't hard to see in applications once you've learned this deadly truth.

acceleration and "enhanced precision" stuff that sensible people turn off, but if you move the mouse nor'-nor'-west of a line drawn down the middle of said mouse, that's where the pointer goes, right?

Not if you've got a mouse with prediction, it isn't. Not necessarily, anyway.

When you move a mouse across a mouse pad, it tends to move in an arc around wherever your pivot point is. For most people this is the wrist; if you move more of your arm along with the mouse the pivot point will be your elbow and/or your shoulder. The further up your arm the pivot is, the easier it is to move the mouse in straight lines, but the harder it is to move the mouse at all. It's particularly difficult to play a game by moving your whole arm around.

Because of the small radius of the wrist-pivot movement, and the difficulty of perfectly aligning a vertical movement with the actual vertical axis

games on that and pure horizontal and vertical lines may make it easier to navigate the desktop and productivity software. Perhaps usability testing strongly supports this. But otherwise... search me.

For whatever reason, though, many sensors do it, and most mice on the market today use sensors that angle-snap.

If you open a graphics program and draw circles and spirals with your mouse while vaguely wondering if this is all some sort of joke to get thousands of people to scribble aimlessly in Microsoft Paint, you will if you have a mouse with no prediction get the circles and spirals you'd expect. They may be a bit polygonal if you're scribbling fast and/or the sampling rate isn't very high, and you'll probably never manage to draw an actual accurate **circle**, but your ovals and meandering loops will be pretty much evenly curved everywhere.

TUTORIAL

HANDS-ON TUTORIALS FOR THE TECHNICALLY MINDED

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Studying: Local vs Overseas

Chris Taylor ponders the benefits and costs of moving your education off-shore.

Maybe it's just because Australian employers don't appear to prefer workers who've been educated overseas as opposed to locally, but seemingly, going overseas for education isn't something a lot of young Australians put a lot of thought into. If you're a local, studying in Australia is probably relatively inexpensive for you – at least in the short term, so far as course fees and administrative costs go. The fact that our government has a system of loans and subsidies probably doesn't help, either. And then there's welfare – if you're making crap money or no money at all, you're eligible for rental assistance and such. On-campus politicians might argue for free education for all and free public transport for all and free compulsory student union membership for all, but by damn near any objective measure a student in Australia is truly a citizen of the land of milk and honey.

We're not going to argue that, somehow, a university in the UK or US or France or wherever else will provide you with a much better education than a university in Sydney or Brisbane would. Sure, they may rank highly in all those international rankings of 'best universities in the world', but let's not act like we have a shit education system. We don't. A lot of the ranking schemes are based on more than what you, as an undergraduate student, would experience at a given institute. Many place a lot of weight on the amount of research papers institutes put out and things of that nature. Unless you're intending to eventually become a citizen of wherever it is you go to study, or to perhaps work somewhere else overseas, the (significant) extra expense of having earned a degree from a 'superior' overseas institute may not be rewarded with better career prospects or a higher salary.

Also keep in mind that in some rare instances, qualifications from overseas may not get you very far here – at least not without additional pieces of paper. If you studied education overseas, for instance, you'll probably need to go through the motions of getting some sort of equivalency certificate.

We'd argue – with caveats, of course, as there probably are some Australian employers out there that'd prefer to hire an MIT grad over an otherwise identical University of Melbourne grad – that unless you want to study something that's simply not offered to students in Australia or are intending to leave our shores behind for good, there's no real academic reason to justify the many thousands of dollars of extra expense. Unless, you know, mum and dad are independently wealthy and very generous.

On the flipside

But on another level entirely, studying overseas can be an incredibly rewarding experience. You get to spend a few months or years living somewhere else and, in most cases, will have much better prospects for cheap and easy international travel than if you'd stayed in Australia. If you're studying in the UK, for instance, or anywhere in Europe really, the entire continent is very accessible. Similarly, if you're in Asia or North America, going overseas during semester breaks can involve no more than train trip or short, cheap flight.

A lot of larger Australian universities have campuses dotted around the globe. For example, Monash University and Curtin University both have campuses in Malaysia, as well as others in South Africa (Monash) and Singapore (Curtin). The University of Wollongong has a campus in Dubai. RMIT has two campuses in Vietnam. As a student of the Australian mothership, it is possible to study a single subject, a semester's worth of subjects or even an entire year of your course at one of these campuses.

This is, perhaps, the cheapest way to study at least part of your degree in another country. The FEE-HELP system provides loans to cover such expenses as course fees, accommodation and airfares. Just keep in mind that university-owned accommodation, which realistically is what most international students would be looking at if they were staying in an unfamiliar country for only three or four months, can be horrendously expensive. You'd likely be able to find cheaper accommodation on your own… but that accommodation probably won't include most of your meals and other services such as an internet connection and shuttle bus or, in the case of somewhere decidedly unsafe such as Johannesburg, the benefit of campus private security.

With some exceptions, the international branch of an Australian university is likely to be tiny in comparison to the mothership. Fewer courses and subjects will be on offer. The campus may even only offer courses from two or three different faculties – things like commerce, which bring lots of students to Australia.

Even universities without their very own building in Vietnam or Malaysia or Italy or wherever else will have at least some partnerships with institutes around the world. Depending on the nature of the partnership, you may be able to attend a foreign university for six or twelve months after a year or two's worth of study in Australia. Again, you can't assume that because you're studying this degree in Australia and you have available, as optional electives, a wide variety of subjects, that you'll find the same offerings at your institute's overseas partners. The relationship your university has with another may be based on a single faculty or course.

Again, this is a relatively 'inexpensive' option to take. The OS-HELP loan may still be available. You may, through a relationship your home campus has forged with a local bank, be eligible for some sort of low interest student loan. You may be really bloody lucky (or just academically good) and get some sort of scholarship. Classes may or may not be delivered in English. If they're not, don't be surprised if you need some sort of language test to prove that you're 'academically fluent' (the kind of fluency you won't pick up from just a few months of watching lots of foreign cartoons with the subtitles on or listening to travel talk CDs in the car). You will also probably need to get some sort of special student visa, which will place severe restrictions on how many hours you're allowed to work – assuming you're allowed to work at all. That's a hard truth about being an international student, really.

Piggy bank

Australia is, it could be argued, fairly generous. Yes, international students can't work as many hours as they might want to, but they can still go out and get a job driving a cab or flipping burgers or selling milk and bread. In many countries, foreign students – and this would

be you, if you went there – can't do that. It's simply not an option. At least, not if you want to do everything above board. And chances are, if you're working illegally – which we don't really condone – you're going to be exploited half to death, just like the students who come here and find that visa restrictions can severely

similar services such as FEE-HELP or free or heavily subsidised education simply won't be as generous with you – you, as an international student, are the cashed-up oil that greases the wheels of the whole machine.

It's worth researching, before you apply for anything, what the work restrictions and

go so far as to get you a job. We urge you to approach such schemes – and there are ones that will organise 'free' or very cheap in-home accommodation too, particularly in Asia – with caution. Some are legitimate systems designed to make life easier for an 18-year-old who has just moved half way around the planet to study commerce. But just as likely – maybe more often than not – you'll learn that a free lunch gets followed by a hefty bill. If it seems too good to be true, it's probably not.

And chances are, if you're working illegally – which we don't really condone – you're going to be exploited half to death.

hamper their ability to cover the rent and bills. Unless you're in a situation where your family or someone else is going to send you money, chances are you're going to have no income whatsoever when you're studying overseas.

Studying an entire degree overseas

The other option is to enrol in an overseas institute and start and finish your degree there. You won't be eligible for any assistance from the Australian government, although depending on what you're studying and where you're going you might be able to apply for some sort of scholarship. The countries that offer

such are. Some countries will allow you to work enough hours that, assuming your accommodation and fees have already been covered, you'll be able to afford the occasional trip to the pub, maybe a little bit of travel and other luxuries. Good luck finding anywhere that will let you work enough hours (above board) to make enough money to actually cover the cost of your own fees and your own accommodation. Also keep in mind that when you arrive in the country, customs may want to see that you have access to enough money to support yourself for at least a while. Most universities will be able to point you in the direction of the sort of employers that will take on international students. Some – and these are quite rare, mind – will
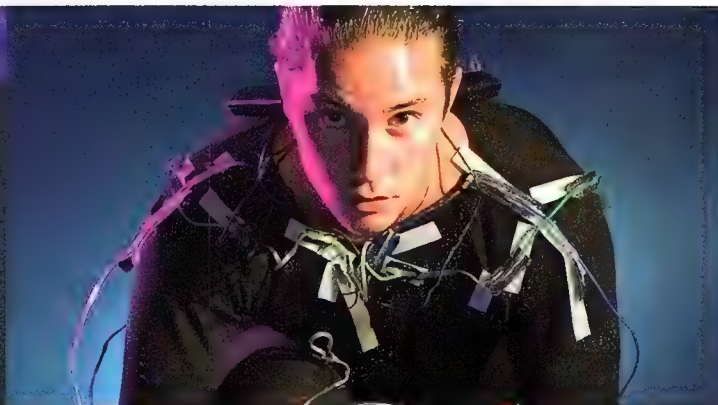
Home Server Hardware

Justin Robinson gets himself some centralised storage, Atomic-style.

Data. The average Atomican will have lots of it, and it's something that I had in spades. The problem for most of us is that our data is spread out across multiple computers and disk drives, with sometimes essential data existing as only a single copy. It might not be the end of the world if you lose your Hello Kitty .jpegs, but you'll be cringing if you've lost your family pictures and videos when a disk drive gives up the ghost.

It's the possibility of the latter event that motivated me into looking at centralised storage for my home. There are quite a few options out there, from USB hard drives to Network-Attached Storage (NAS) units, to full-blown server racks. My criteria were simple: low power consumption; low noise; good expandability; and a decent price. As an always-on (and therefore always-available) system, I did not think it appropriate for the system to consume more than 50 Watts in normal use, which immediately ruled out using an old computer for the purpose.

And due to the location of the unit, residing in a room where another system is used frequently,

Basic Home Server Hardware

HP ProLiant MicroServer N40L:
$264.95

Seagate Barracuda Green 2TB x 3:
$375

Samsung F3 1TB x 1:
$69

Total: $708.95 (no shipping)

it had to be quiet enough not to drive people mad. Liveability is an easy-to-forget aspect of any system, but it's better to plan ahead than to have to deal with an unsolvable problem once your money's spent. USB 3.0 connectivity is a big plus, too, as external media is shifting to the faster standard and being able to support that was very important.

However, while there are NAS units on the market that do support USB 3.0, and have low power consumption and noise, these routinely cost over $600 – and that's before hard drives!

As an example, the QNAP TS-459 Pro II Turbo NAS costs almost $900 without drives. Sure it offers USB 3.0 ports, dual Gigabit LAN and a bunch of virtualisation options, but these are overkill for the home user. External hard disk drives are not the answer either, as it quickly becomes messy with power and data cables strung across the desk.

What I decided upon was, I believe, the best compromise across all of these choices. So without further ado, let's introduce the platform that answered my criteria.
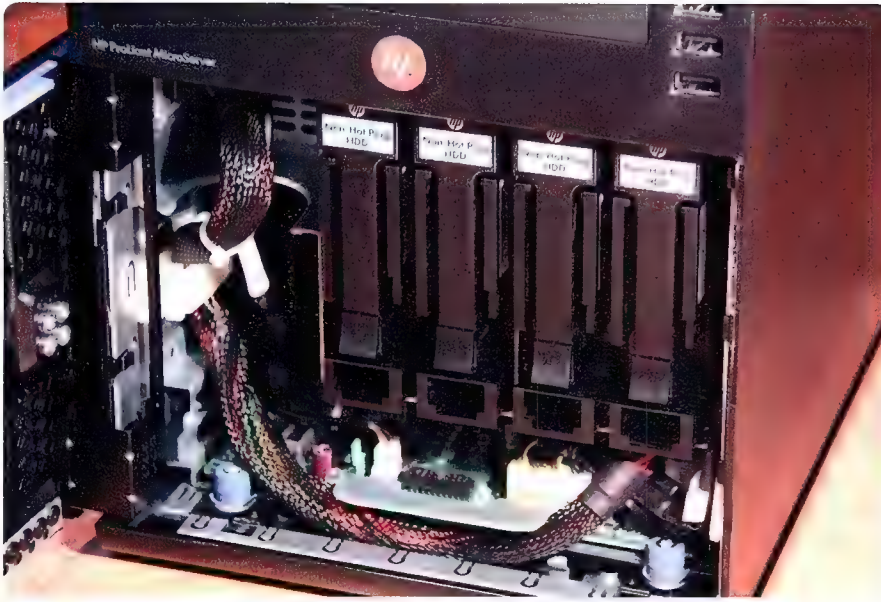
The HP ProLiant N40L MicroServer

Though it comes with an awkward name, the HP MicroServer does not offer an awkwardly high price – I paid just $264.95 (plus shipping of $16.95) online, which netted me a perfectly functional home server. However, there were areas in which the HP N40L could use some work. At stock, the N40L comes with only a single 250GB drive, which is clearly nowhere near enough for the average user – let alone a house full of users. Considering the price, this isn't anything to complain about and is easily fixed.

The hardware is perfectly functional, too, and it's based around a 1.5GHz dual-core AMD Turion II Neo processor that consumes a mere 15 Watts at full power. It's paired with an AMD RS785E Northbridge chipset (13 Watts when using the built-in Radeon HD 4200 graphics, much less in typical use) and the AMD SB820M Southbridge (4.9 Watts), which offers a total of six SATA 2.0 ports – though one is piped to the rear of the casing for eSATA, leaving five internally. There are two USB 2.0 ports on the back, four on the front, and there's a single 1Gbps Ethernet port for networking. The integrated HD 4200 has a single VGA output at the rear, used for initial setup and then only used if something goes wrong down the track such as drive failure (rare, but it happens).

But that's just external connectivity; the inside of the N40L offers another USB port on the mainboard (useful for lightweight operating systems), a full-length PCI-E slot, a 4x PCI-E slot, and two DDR3 slots, one of which is filled with a single 2GB DDR3 stick running at 1333MHz. Though the board supports Error-Correcting Code (ECC) memory, it's not needed for most home users, and 2GB will be plenty for most uses.

Impressively, the Turion II Neo supports virtualisation, so if you wanted to throw two sticks of memory in for 8GB and virtualise a bunch of systems, you'd be more than able to – though the processor does not have a lot of grunt, it's enough to play around with.

Setting up

When the server arrives and you remove it from its plain, nothing-but-business box, there's a key cable-tied to the back of the server that unlocks the front door. Swinging it open reveals the four hard drive cages that are the focus of the N40L; as labelled, they are not hot-plug drives, so cannot be installed or removed without first powering the system down. As with any computer hardware it's never a bad idea to use an anti-static wrist strap clamped to the metal chassis, but you can get away with simply leaving the power cable plugged into the PSU and touching the metal chassis before touching a component.

The first job is to push down the clip at the bottom of any drive cage, and slide it out. HP have thoughtfully placed all the screws you will need at the bottom of the front door, and there is a mini Torx tool hanging there too. While this does mean that a Philips-head screwdriver will be of little use, it also means that it's essential you keep that tool somewhere safe – either in its original position, or in a drawer. Just place the HDD in the cage (look at the existing 250GB drive for inspiration if you're having troubles orienting it), and screw it in with four screws. Slide the cage back in, ensuring the top of the cage's catch is beneath the metal lip when it locks closed. Put in as many or as few drives as you want, and if you have access to a label printer (or white marker) it's useful to label the caddies with a logical system so you have an idea of which drive holds what data.

I personally left only a single 1TB Samsung drive installed (which I had bought and never used for some reason) when I messed around with software, then installed the drives sequentially and finally labelled them in the OS.

So at this point the hardware's gone fine, there's little in the way of stuffing around, and you can go ahead and throw some software and data on the server (which I'll cover in a follow-up feature). However, the entire system is cooled by a single 120mm exhaust fan at the rear, and a slow-spinning 40mm fan in the PSU. As such, temperatures on the processor routinely hit 54 degrees under load, idling somewhere around 38 degrees, and the PSU was consistently warm to the touch. Clearly, this will not do.
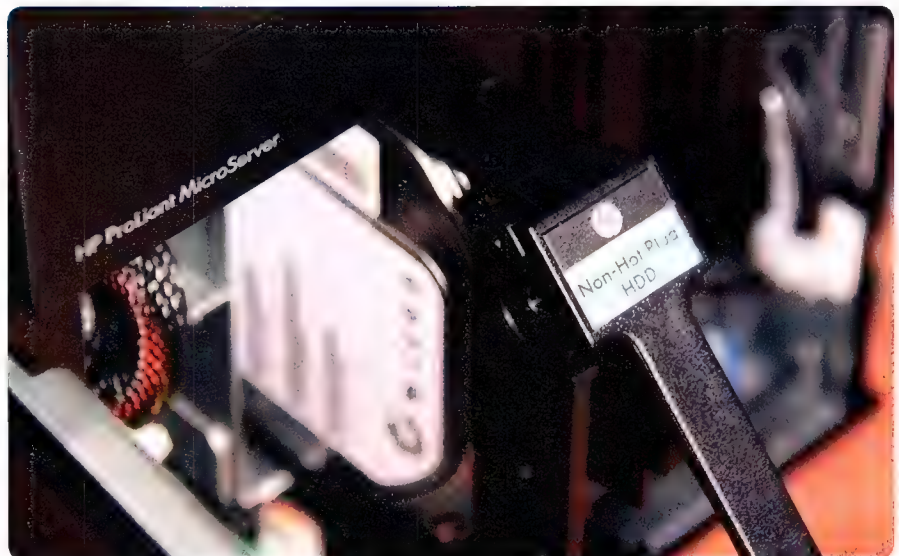
> **HP has thoughtfully placed all the screws you will need at the bottom of the front door, and there is a mini Torx tool hanging there too.**

Mod 1: Add Cooling Fans

ESSENTIAL

Voids warranty?
NO

Keep temperatures down and make your tech happier without voiding warranty.
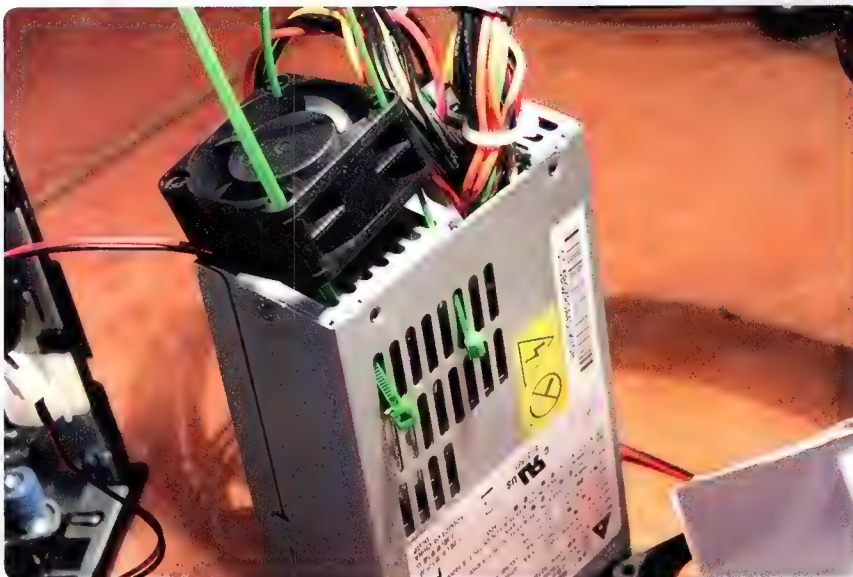
The cooling system in the MicroServer at stock is more than sufficient at keeping the system from overheating, but as with any computer, keeping it cooler is very worthwhile. Not only do cooler temperatures mean more stability, but it can extend the life of the system – and more fans means extra redundancy in case a stock fan stops spinning. These modifications enhance overall system airflow, and reduce the PSU temperature markedly, while adding very little perceptible noise.

To those wary of messing with computer tech, firstly, welcome! Secondly, none of these steps will void warranty and are completely reversible in the case you need to use the 1-year HP warranty on parts.

Uninstall the PSU

Using the included tool, remove the three screws at the rear of the N40L that hold the PSU in place. Unplug all power cables, and gently remove the PSU from the system. Take three thin cable ties (thick ones will not fit)


and thread them through the cooling holes in the PSU as shown (the teeth facing outwards). There is minimal risk of electrical shock, and cable ties are not conductive, but be careful not to touch any internal components – any electrocutions or shocks are on you – especially don't go poking around with a screwdriver. Grab the 40mm Mini Kaze Fan, and pass the ends of the three cable ties through its mounting holes.

Secure the new PSU fan

Ensure the fan is oriented correctly; you should not be able to see its sticker. Manoeuver the cable ties so that the heads are adjacent to the fan, and tighten by pulling the ends of the tie through the head. Trim excess length with scissors. The fan should now be mounted flush to the PSU, and you can gently push the PSU back into place and re-install the screws. Use the Molex power splitter and Molex to 2x 3-pin fan cable to power the fan, and plug all power leads back into the system.

Create mounting points

Grab four cable ties, and open the server's front door. There's a honeycomb mesh behind the perforated fascia; place the Kaze Jyu 100mm fan against it for reference, and at each corner of the fan, pass a single cable tie through two

cells **horizontally**. Thread the tie through its head and tighten to a diameter of roughly 1cm, which should be just enough to pass another cable tie through. Do this for each of the four corners; ensuring the fan remains in the same position. It may be easiest to do this by removing the front door entirely, though I did not bother.

Attach the new front intake fan

Pass a single cable tie through each of the four corners of the fan, and orient so that the sticker is facing towards you with the power cable exiting at the top as pictured. Loop the cable tie through the loop you made earlier, and secure it. Cut off excess length with scissors, being careful not to cut the power cable. Though this fan comes with a Molex to 3-pin adapter, I used that cable in Mod 3 so this fan was powered by the same splitter cable that powers the 40mm PSU fan. Other slim fans may work, as there is just 10mm of space available, but standard width fans will not fit.
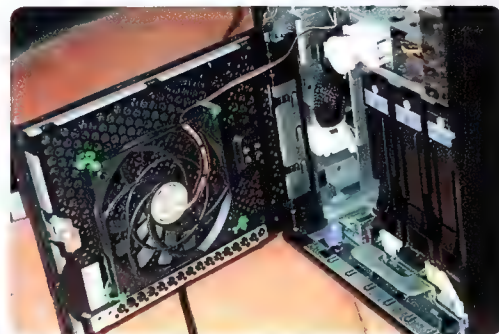
Turbo-charged cooling

Scythe 40x25mm Mini Kaze Ultra (3500RPM): **$10**

Scythe 100x10mm Kaze Jyu Slim (1000RPM): **$15**

Molex power splitter: **$3**

Molex to 2x 3-pin fan cable: **$3.50**

Thin cable ties: ~**$10**

Total: **$41.50 (no shipping)**

How To 1: Add USB 3.0

OPTIONAL

When USB 2.0 is not enough.

Voids warranty NO

I made a point of mentioning USB 3.0 earlier as being important, and those keeping score would notice that the N40L does not have USB 3.0 ports at stock. However, it does have PCI-E slots – and to make full use of them, I grabbed an ASRock U3S6 USB 3.0 card for $25 and thought everything was fine and dandy. That is, until I went to install it.

Unluckily for me the card did not come with a half-height, low-profile mounting bracket; it would not fit in the case. I queried the retailer, PC Case Gear, but received no response as to where (or if) I could buy the correct bracket. A bit annoying, but not the end of the world – I took a trip to eBay and found a very similar card from a no-name brand that claimed to sport the same NEC controller (now owned by Renesas).

It cost me $17 (delivered) and came with appropriate brackets; worked with the same drivers as the ASRock card; and returned effectively identical benchmark results. My external drive read at 132.8 and wrote at 130.8MB/s on the ASRock, and 132.1MB/s read with 129.5MB/s write with the generic. So that's a win in my book. Sure, a solid-state device will saturate the PCI-E x1 link, but rotational media will run much faster than USB 2.0.
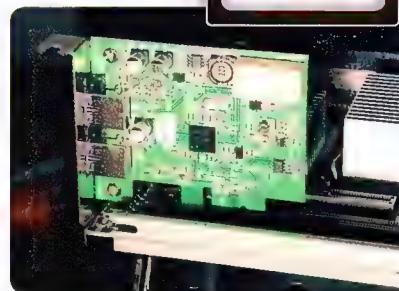
Add a USB 3.0 card

Generic USB 3.0 card: **$10**
www.atomicmpc.com.au/137_USB3

Molex power splitter: **$3**

Molex 45cm power extension cable: **$6**

Total: $19 (no shipping)

Mod 2: Add a fifth HDD and blowhole

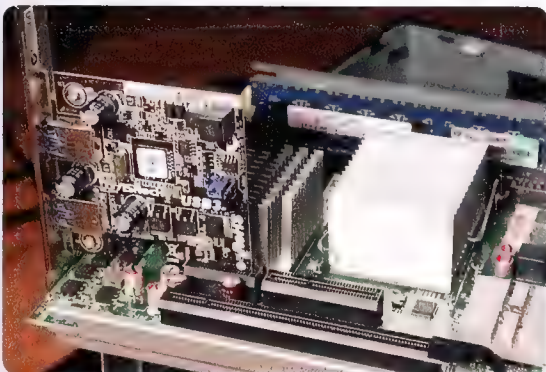*OPTIONAL*

There's space for an ODD, but why not more storage?

Voids warranty YES

The N40L comes with a single 5.25in drive bay at the top of the chassis, clearly intended for an optical drive. However, it's rare that I use optical media, and a USB optical drive is my workaround in the times I require one. So with the space up for rent, I figured, why not put another hard drive in there?

I originally configured the server so that the OS drive was in this top bay, buying a bay adapter off eBay – because they're strangely hard to find in stores – and mounting it at the top of the case. Using one leg of the Molex splitter from the USB 3.0 card step, passing a 50cm SATA data cable from the drive, through a channel to the left and down to the motherboard, the drive sat pretty. However, it was pretty hot. To fix this, I attempted to mount another Kaze Jyu to it, but this merely circulated the warm air around. For a long-term solution, I will be going back and cutting a blowhole pictured in SketchUp model form to allow proper ventilation and adding two (also uncommon) 92mm fan grills inside and out; for now, only rarely-accessed storage drives will be in that bay.
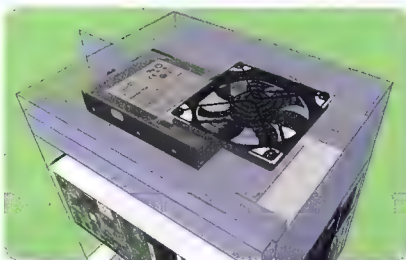
Fifth HDD and Blowhole

Seagate Barracuda Green 2TB: **$125**

SATA cable 50cm: **$4**

Molex to SATA power adapter: **$3.50**

5.25in to 3.5in adapter: **$9**
www.atomicmpc.com.au/137_Adapter

Scythe 100x10mm Kaze Jyu Slim (1000RPM): **$15**

Fan mounting screws x 8: **$2**

Wire Fan Grill 92mm x 2: **$5.80**
www.atomicmpc.com.au/137_Grill

Molex power splitter: **$3**
(required only if other fan modifications not taken)

Total: $167.3 (no shipping)

Mod 3: Change thermal paste   ADVANCED

Swap out that stock gunk and get more fans in there!

Voids warranty?
YES

Moar cooling

100% Isopropyl Alcohol - **$10**

Paper Towel - **$4**

Thermal Paste - **$10**

30x10mm Sunon MagLev
(9500RPM) - **$7**
www.atomicmpc.com.au/137_
MagLev

30cm 3-pin fan extension cable - **$5**

Zalman Fanmate2 controller - **$8**

Total: $44 (no shipping)

Remove stock paste

Unscrew the mainboard and unplug all power leads, sliding the mainboard out from the chassis. Use the included tool to remove it from the metal tray, as this makes working on it easier. Remove the large processor heatsink by pushing down on one of the metal leads and unhook it from the mainboard. Grab some paper towel and apply isopropyl alcohol to it, then clean the heatsink and processor. Do the same for the southbridge heatsink.

Replace with new goop

The stock paste has the consistency of old chewing gum, and it's normal for the cleaning process to take around fifteen minutes. Your heatsink and processor should be super clean now. Grab your favourite thermal paste and apply to the processor (or chipset). Re-mount the appropriate heatsink, then remove to ensure proper coverage. Mount once more and pat yourself on the back.

Yes, really, another fan

Take your tiny 30x10mm fan and extension cable, then remove the metal pins from the plastic male connector casing. Attach the 12V lead to the red fan cable, and the -12V lead to

the black cable. **Soldering with heatshrink is absolutely best practice**, but I did it the dodgy way with duct tape. Wedge the fan between the processor heatsink and Northbridge chipset heatsink, oriented to blow towards the USB ports. Pass a cable tie through its mounting holes and wrap around the Northbridge heatsink to prevent it from shifting laterally (it cannot move vertically as there is no room). Cut off excess cable tie, and ensure fan blades can spin by poking with a thin screwdriver.

Cut down on noise

Plug the 3-pin extension cable into a fan controller (I used a Zalman Fanmate2 I had lying around, but any variable model similar to this will work), and reduce the voltage/speed to 5V. At full 12V speed the Sunon MagLev fan makes a horrendous amount of vibration; at 5V it's very hard to hear and still moves a decent amount of air. Temperatures in summer will never make the server flinch.

atomic 137
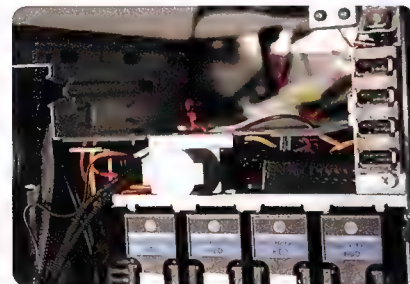
How To 2: Cut down on vibration

Five hard drives make for a lot of wobbling.

ESSENTIAL

Voids warranty? **NO**

Corporate servers can make all the noise they want, sequestered away in dedicated rooms or in far-off data centres. However, a home server doesn't have that luxury – and five spinning drives with up to five discs in them means a bit of vibration. I ultimately decided on a small shelf to keep the server on, and its plastic feet are not exactly suited to dampening this noise. While there are replacement feet options out there (such as these silicon feet at **www. atomicmpc.com.au/137_Feet**), they cost money and involve ordering from overseas or hunting around to find decent ones locally.

My solution was to use materials provided with the N40L by none other than the manufacturer: the very packing foam it is shipped in. Using only the lower piece of foam, I merely sat the server into it, using a pair of scissors to notch out channels in the rear of it for cables, and cut away a small amount in the front to give the intake fan room to breathe. While it might not look amazing, the vibration noise is no longer a concern. Win!

External hard drives get a similar treatment, though not with foam as I did not know how it would deal with a warm drive. My solution was to head to Kmart and buy a silicone pot holder; a $2 square just bigger than a CD case, and built to deal with heat. Cutting it down to size with some scissors, and cable-tying it to my external drives (with appropriate holes for ventilation), and the drives no longer make any noise. Cheap, and very effective. Fans can get the silicon treatment too, though it's not as essential.
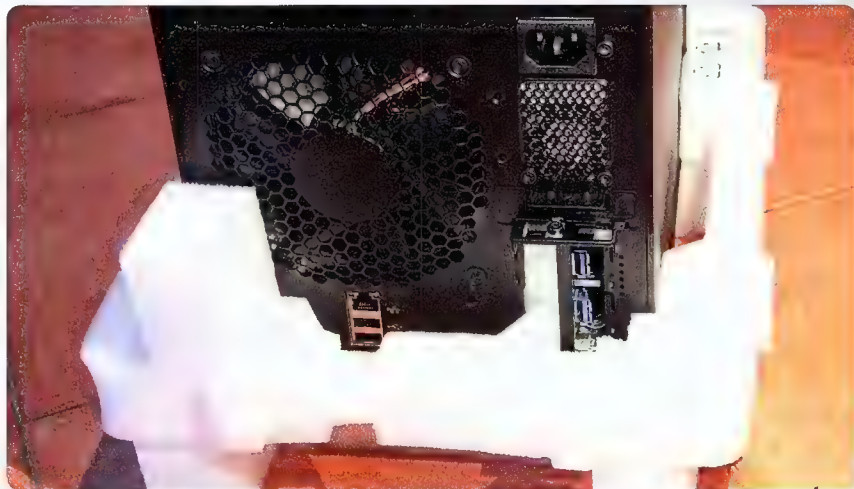
So what now?

The N40L wasn't a bad system when it arrived as configured from the factory, but the modifications I have applied make it a well-cooled, flexible platform for serving data and other functions to my house. It makes no more noise than it did at stock, and arguably much less now that it's mounted in a foam block that absorbs a lot of the vibrations that first intruded on the quietness.

To give you an easier time with getting your head around what these modifications actually look like, I've done the legwork to put together a Google SketchUp model that is roughly to scale, showing the placement of major components, and threw in a few more photos and benchmark data that we didn't have room for. Please check it out at the hyperlink to the right– consider it essential continued reading for this feature.

Now that the hardware is configured (or will be once I find time to do that top blowhole), my next step is to grab some software and start messing around with that side of the equation. While I'm still tossing up between installing a product like Windows Home Server 2011 to a hard drive, or a lightweight Linux-based distro to a USB stick using the internal USB port, I have very few restrictions.

I'll be working out the best solution for my needs and will write them up in another tutorial when everything is finalised, so keep an eye out in the mag for a follow-up. Until then, I'm going to enjoy using my very own modded home server.

www.atomicmpc.com.au/137_HS_Extras
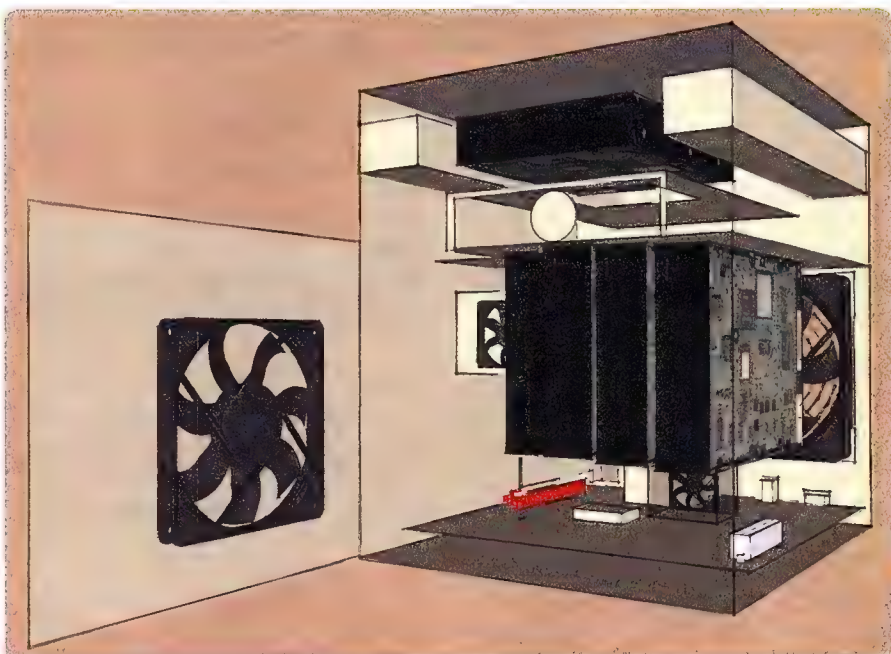
GAMEPLAY

GAMES, GAMING AND GEEKERY COVERED... ATOMIC-STYLE

Drake... WE ARE LEAVING!!!
Well, actually, we're not leaving, but we are getting very excited about Gearbox Games' upcoming Aliens: Colonial Marines.

Not only is this looking like one hot game, it's also looking like an essential part of the whole Alien canon. Discover why it's the official Aliens sequel we've all been waiting for in this month's Engine Room feature!

On top of that, we go a little strategy mad, this month. We've got Cold War fighting in Wargame: European Escalation, just plain cold fighting in Naval Warfare: Arctic Circle, and Ben Mansill waxes lyrical about the paid beta for Carrier Command: Gaea Mission.

And a whole mess more!

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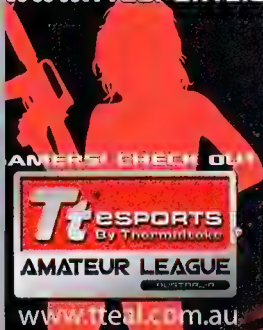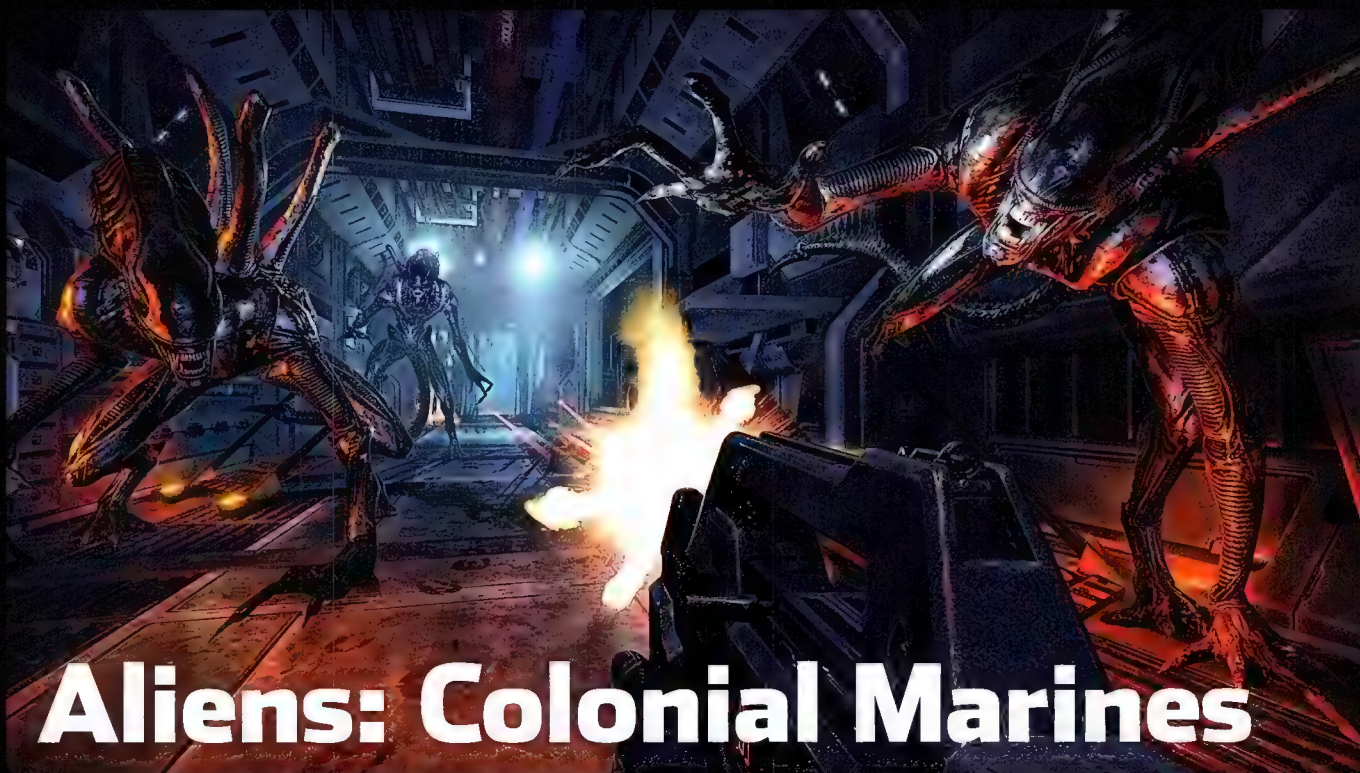
Aliens: Colonial Marines

The game is most definitely not over, man, as **Nathan Lawrence** proves by delving into the fascinating concept behind Aliens: Colonial Marines – a canonised videogame sequel to a 26-year-old movie.

James Cameron's Aliens film changed the future of sci-fi and action when it was released in 1986. You don't have to look too far into similarly themed films or games released since then to see that Aliens' influence lives on, even a quarter of a century later. Some references are subtle, while others take more of a Halo approach and borrow liberally from the trailblazing material. It seems clear that part of Halo's success has to do with the fact that it acted as a spiritual sequel to a desire that Cameron implanted in the chests of Aliens fans all those years ago.

Alien 3 brought the franchise back to its roots with tense corridor confines, a lone Xenomorph stalker and an absence of firearms but, in many ways, it wasn't the sequel that was implicitly promised by the establishment of the United States Colonial Marine Corp in Aliens. Alien: Resurrection attempted to mimic the scale and 'action feel' of Aliens, but it was still without the presence of Colonial Marines.

What James Cameron implanted 26 years ago and Halo explored 15 years later has been carried canonically forward by another creative team. Gearbox Studios has been given the unprecedented 'no pressure' task of creating the Alien 3 that many fans feel should have been: a return to the Alien universe that's led by the pulse-rifle-toting, smart-gun-wielding, sharp-knife-brandishing ultimate badasses: the United States Colonial Marine Corps.

Fox on the run

The most astounding facet of Aliens: Colonial Marines is the fact that this game is a canonised entry in the Alien franchise. Not only did Fox give SEGA and Gearbox Software their blessing to make a game set within the Alien universe, it also means that any officially sanctioned Alien game or movie must respect what Gearbox Software creates in Aliens: Colonial Marines.

Technically, this also means that the upcoming 'semi-prequel' to Alien, Prometheus, directed by Sir Ridley Scott—the auteur behind the original Alien film—has to pay attention to any relevant crossover from Gearbox's inclusions in the beloved franchise. There was talk of Colonial Marines and Prometheus scripts changing hands for this exact purpose but, even more impressively, Gearbox proudly stated that they'd received the blessing of the father of the Alien franchise.

Producer Brian Martel met with Ridley Scott, who blew the dust off old concept art and

Gearbox hearts PC

Art director Brian Cozzens wasn't afraid to delve into the challenges of multiplatform development which, refreshingly, reaped a healthy dose of PC love. "There are things that you can do on the PS3 that you can't do on the 360 well, and vice versa. And then the PC version obviously blows everything out of the water, because it's updated and it's modern. It's got a lot of texture memory, most likely a modern GPU. We heart PC. But the [user] base on console is huger, so we try to make everyone happy. That's the real challenge. When we're making assets, we're like, 'Okay, what's the highest fidelity of this asset? What's the lowest fidelity of this asset? Who's going to get what? How do we make sure that when the PC player is playing that he's getting maxed out with everything that he wants? That he's getting as high-res as he can be, and everything is having as much as fidelity as it can be?'"

discussed the universe he created. Brian Cozzens, art director at Gearbox Software, summed up the importance of the meeting from a fan perspective. "We have Ridley's blessing. That was pretty awesome because he's the creator. Ridley's methodical with some of the stuff that he's doing... for Brian Martel [got] to sit down with him, see the storyboards, see his ideas and where he felt the story was from.".

Firing the canon

Day one of the Dallas-based event we attended included a pimped-out venue that was a wet dream for any Aliens fan: multiple widescreen TV screens playing Aliens, caterers dressed in Colonial Marines garb, and 'Bishop' knives at the lunch benches for brave journos to re-enact the infamous Aliens knife trick. But as impressive as that was, it paled in comparison to the Alien Queen prop that overlooked the screening area. We're talking about the only surviving original Queen prop from the film that is normally housed

in an abandoned missile silo somewhere in the Nevada desert and has an insurance premium that even the Weyland-Yutani company wouldn't want to pay.

The point of all this is that it was clear that SEGA was keen to show us that they are extremely serious about Fox's IP. John Mulkey, design director on Aliens: Colonial Marines, extrapolated on the process of dealing with the canonisation process as it relates to receiving approval from Fox. "It is a little bit of a fight sometimes, but it's been really good. It's a matter of us essentially pitching to Fox and saying, 'Here's what we want to do. We think this will be a great direction to go.' And we're pitching these ideas and they come back saying, 'No,' and then we counter with, 'But, come on! It's going to be awesome!'"

Too many chefs

Given the integrity of the Alien IP, we were a tad concerned that there might be a few too many chefs working in the Colonial Marines mess hall. After all, Fox has input, SEGA has producers overseeing the project, and Gearbox Software has every role from producers through to day-to-day devs shaping the project. On top of this, there's a certain level of expected fan service given that the game will be exploring a renowned universe and locales from the Aliens film such as the U.S.S. Sulaco, the derelict planet LV-426

and the dilapidated Hadley's Hope settlement. Randy Pitchford, president of Gearbox Software, is confident that the Colonial Marines kitchen has the right amount of chefs.

"What's neat about partnering with Fox and SEGA is they're not chefs. The people on the publishing side, and marketing, sales and PR, they care about the fiction, they care about the brand and they care about our game. SEGA has taken the role where they've just supported us. But when you see that they care and they're fans too, it's more like you've got a restaurant full of people that love great food, and we're in the kitchen making it. And we get to walk out of the kitchen and there's all these people there saying, 'Guys, the food's great. This restaurant's beautiful. And that was awesome.'"

"The Fox side has been very similar. It's their brand. It's one of the most powerful franchises. Period. They care a lot about it, it's a very precious and important thing to them, but they are trusting the talent. They have really gotten behind us. If I was making the movie, I would make that movie with 20th Century Fox. It's not surprising that James Cameron does a film like Avatar with 20th Century Fox, or guys like George Lucas do a film with 20th Century Fox, because those [directors] are in total control of their stuff. Fox has gotten into a position where they understand that they should really trust the talent, if the talent is credible and worthy of their trust."
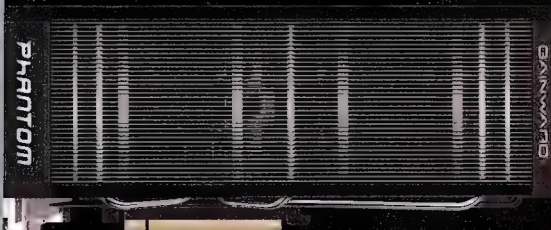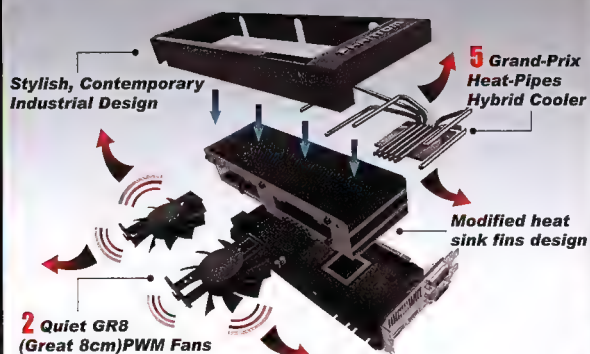
Genre blurring

James Cameron's Aliens film is a prime example of an incredible balance between film genres: action and sci-fi; with a side of horror. It's only fitting that Aliens: Colonial Marines has to juggle a few genres of its own. While action and sci-fi are obviously in the mix for Colonial Marines, the horror component has the potential of being a bigger thing, given the interactive nature of this Aliens sequel. John Mulkey is an ex-Monolith Productions developer who worked as a lead designer on the F.E.A.R. series.

"I was the lead designer on F.E.A.R., so I'm accustomed to that idea of how to scare a player who's holding a machine gun. The idea is that it's not so much that it's survival horror; it's the idea of tension. It's that idea of vulnerability. It's the idea that when you're walking through the halls, and you've got a frigging pulse rifle, you still feel vulnerable. It's tension and suspense and that sensation more so than a straight up kind of survival horror. [Colonial Marines] is a little more streamlined for action."

Safety second

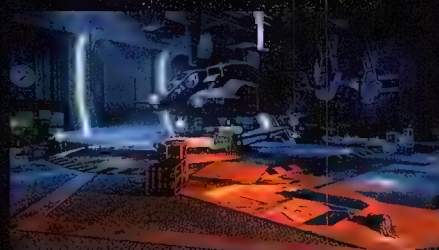One of the biggest problems with the original Dead Space was its definite safe zones. You knew when you got to a shop area or near the oft-visited station platform that you were in the clear. Whatever tension that built up in the eerily effective moments leading up to such a place immediately dissipated in these zones. Producer Brian Burleson had a wry smile when we asked if Aliens: Colonial Marines would have similar areas. "I don't think there's any space where you'll feel like, 'Oh, I'm good here.'"

Part of what's set to enhance the overall tension in Colonial Marines is the Xenomorph AI. We experienced a few different types of Xeno during our time with the game. There was the familiar Drone, the all-new elusive Lurker and the series-first Crusher: an alien that looked like the chest-busted offspring of a Rhinoceros. Brian expanded on the types of behaviour that players can expect from these cunning foes: "The Xenos have different strategies and, as part of the hive, they have different roles. So, say, the standard soldier that you see in the Aliens film, he behaves a very certain way, and those guys are sneakier. But they're also relentless; they will keep coming at you. There's a nice balance, depending on the environment."

All quiet on the geek front

First and foremost, Colonial Marines will be aimed at fans of the Alien franchise; next, gamers that are familiar with or love shooters; finally, Gearbox Software devotees. At every opportunity, the Gearbox team would geek out over the fact they were making an Aliens game, so it was clear that the team had the appropriate levels of geek love that is an expected prerequisite for crafting a canonised Aliens sequel.

We geeked out with Brian Cozzens on the topic of different Xeno types. Here's what he had to say when we started prying about the Lurker. "It's still humanoid. It is a Xenomorph, so it is meant to take on its host: like in Alien 3, the Xenomorph was in the form of a dog because it gestated in a dog. Keep in mind that there are elements in the story on LV-426 and Hadley's Hope in Aliens that might help explain some other ways that we might get some of those solutions and some of those [Xeno] deviations. There are still a lot of mysteries surrounding a Xenomorph: what their capabilities are, and their origins."

"We are interested in exploring some of those, not just because that's cool and adds to the story, but because the variants are kind of a necessity when it comes to gameplay. Frankly, gamers can't play the same thing over and over again. Obviously, all of the films are one Xenomorph or several Xenomorphs all of the same type, and that's great. But as a game, Fox has understood that we're going to need a little bit of flexibility. It actually works out really great for the story."

The Cameron Blues

A lot of time and effort has been put into achieving the right visual aesthetic for Colonial Marines. In order for players to believe they're revisiting the universe as seen through James Cameron's eyes, it had to have the same look as the Aliens film. According to Brian Cozzens, there were three important elements for achieving the perfect look with Colonial Marines: real-time lighting, specular highlights and the Cameron Blues. Wait. The Cameron what now?

"We call them the Cameron Blues. Cameron likes to use blue for dark scenes because, in a lot of the films that he shot in the Aliens era, it was difficult to process on-film darkness. So he would use blue to solve that problem as well as for his own aesthetic. With a lot of his films—Terminator, True Lies, Aliens and even Titanic—when it starts to get dark, you'll notice that it turns the camera blue. So we're doing that too, and that's another character element because we want it to feel like a sequel to Aliens."

As for the specular highlights, Cozzens emphasised their importance extended beyond mere eye candy. "In Aliens you're talking about awesome ship interiors and lots of metallic surfaces and things. We want those to feel believable and realistic and look cool when you're watching them, so we get our real-time specular highlights across surfaces. It came out great."

Deferred behaviour

We asked Brian Burleson to extrapolate on the importance of the third element that Cozzens had listed as essential to the perfect look: real-time lighting. "Deferred lighting is a really cool system that allows a lot of dynamic elements in an environment, that you don't normally get out of static lighting. The thing about dynamic lighting is that we really made that choice because of the gameplay, because this is a game that's uniquely suited to that type of lighting system. When you have the ability to turn off all the lights or cut the power, the entire environment changes. The Xenos also interact with that as well, so they understand how light works. Because it's all dynamic, if the light goes out, they like to stay in the dark and will actually behave differently, depending on the lighting. It's really kind of cool that we're able to do that, because in a lot of other systems we can't. The most important thing is that we made the choice to use deferred rendering for gameplay reasons and not because it's a cool new thing."

First-person tower defence

Gearbox was staying mum on the specifics of what could be expected from the competitive multiplayer portion of Aliens: Colonial Marines. While we only got to play two all-too-short rounds of team deathmatch, we did manage to glean some information from Randy in regards to the decision process behind the other yet-to-be-revealed objective-based modes. "Right off the bat, Aliens affords us something you don't get in other games: asymmetrical multiplayer. So that's cool. Objectives are fun when a side has something to do and the other side is opposed to that. An obvious one is the last-stand scenario. Imagine you're in an environment and you need to hole up and survive until rescue comes. What doors are you going to weld? Where are you going to get your chokepoints? Where are you going to set up sentry turrets and other automatic defences? It's almost like a tower defence game."

"Another one is kind of the opposite of that, where the Marines are in one place they have to [get from A to B]... But everything along the way wants to kill us and keep us from getting there: especially the Aliens... And the Aliens are trying to separate them, and the Marines are moving, so one guy is kind of fighting and he gets left behind, and the opportunity arises for the Aliens to pounce, and it's a really good dynamic."

With a whole lot of love pouring out of the three creative companies involved, we're confident that Aliens: Colonial Marines has the right chefs in the kitchen and the necessary support to produce an Aliens experience that will appease fans of the IP, and also offer one hell of a first-person-shooter experience, to boot.

Darksiders II

Nathan Lawrence talks with Producer
Jay Fitzloff about THQ's upcoming sequel.

We recently had the pleasure of checking out Darksiders II at a THQ event held in not-so-Sunny Sydney. But the excitement of having hands-on time with new protagonist Death played second fiddle to the 20-minute interview slot we had with producer Jay Fitzloff. Jay was both fun and informative. To check out the salient points, read below, and for the full interview head to **www.atomicmpc.com.au/137_Darksiders2**

atomic So, I'm here on behalf of a PC publication, so I'd like to ask some PC questions. Can you talk to me about any PC specifics?
Jay: The first game we released, I think the PC version came 9 months after, now we're actually doing a simultaneous release.

atomic So it's coming out at the same time?
Jay: The exact same time. Just like the last PC version, I think we spent a lot of time trying to make it a PC game, not just a console port of the game. So we're doing that same type of attention to detail of getting the... if you want a controller, go for it, but if you want a mouse and keyboard, we'll have you set up for mouse and keyboard.

atomic So it's got DX11 and all that sort of stuff?
Jay: You would assume, obviously, you want to make it for different hardware support so everybody can play it. But if you're running top of the line, it looks pretty amazing. I'm running it on an Alienware laptop, I don't think it's on DX11, but everything is just what you'd expect. I mean, graphically it's a lot smoother and, to tell you the truth, I'm glad people are telling me it looks great on 360. But I usually play it on my PC: it's easy to do, it's easy to update and you get constant iterations.

atomic Beautiful. You mentioned the keyboard and mouse thing, and it seems like it's playing really well on a controller; do you find it hard to translate a third-person adventure game to a keyboard and mouse? And how are you approaching that challenge?

Jay: It is hard… I'm not actually the person in charge of UI and the controls, but just from the heart, it is hard. And I think… the hardest part is actually the mouse. The keyboard… I think the standard would be arrow keys are for movement, mouse left, right or up, down and everything. But in a third-person action game, that makes your character really overcompensate most of the time, so… if people want that, they can have that. But I think the ultimate of what you have to do is, this is our standard of what we feel is right, but make it very open in what somebody… especially on the PC, everyone has their own vibe of what they like.

I mean, on console it basically comes down to do you like the Y-axis inverted or not? That's your main point of contention.

atomic I saw the hands-on presentation in San Francisco, it looks amazing, and they were only showing off side quests. Are you showing off side quests in there?

Jay: No, that was main quest. If you're fighting a boss that size and it's a side quest, I'd be like, hats off to us, that's incredible.

atomic How far into the game? Saying hours is kind of hard with a game like this, isn't it?

Jay: We don't know… in the real game there will be more fights. We felt that we were taking a leap of faith in you guys learning the controls without the tutorial level, and we made you a little bit higher level than you normally would be, too, just to toughen you up so you wouldn't get killed so much in the fights. But I think, in the end, it'll be roughly the same challenge, though, because you'll be more adept at your character, and you'll also have customised it from the get-go instead

of having jumped up to level 10. So you'll be more used to your… how many of your special abilities on your skill tree did you use?

atomic I had special abilities?

Jay: Exactly. We're like, here's a bunch of special abilities, and that's what I kind of noticed is people were like, 'Meh, I'm not using those.' But if you start from the beginning… you get a new thing and you say, 'What's this do? Oh, that's cool.'

atomic When you've got such a heavy emphasis on combat and platforming, did you find that it was difficult to balance?

Jay: First off, a lot of that stuff was stuff we wanted in the first game, but we just didn't have the time then to do it… Balancing is difficult, especially the loot, because you're randomly dropping items and we do base it off your level to keep it. Out of all the stuff we have to balance, that's the hardest.

So, for combat, since it has the loot and it has the skill tree and it has levelling, that makes the combat deeper and richer because there's that much more to explore within combat. In traversal, you'll notice Death is more agile and

he can climb up higher. So that allows us to… design levels a lot more vertically. It's a much bigger game, I could throw out a number like the game is four times as big; but does that translate to four times as many hours of gameplay? No, it means that the world is bigger.

atomic Going back to this idea that there's a lot of sidequest stuff going on, you could hit a point in the game, where you could do a whole bunch of side quests, level your character up, and come back to the core quest where you might be ranked higher than your enemies. So, do they scale?

Jay: They generally don't, and there are exceptions to the rule. Understand that bosses, like the guardian that you faced today, it wouldn't matter what level you are; you have to go through steps to beat it. So we say, yeah, if somebody wants to grind, and get powered up before they go to a dungeon or learn moves ahead of where we expect them to, go for it. That's cool, but do expect that when you go into the next part of the quest, it will generally be easier for you in combat than it would be for someone who just went straight to it. But it all works out, usually, because you might be tougher in combat, but you still have to solve the puzzles. You still have to get through the boss fights… it doesn't matter what level you are.

atomic So if Darksiders II is a success, we should expect long hair in III?

Jay: Longer hair.

atomic Down the back. And by the time you get to IV-

Jay: -Yeah, it's going to be a character like the Marvel-verse. So I think for Darksiders IV and V, we're going to wait for tech to advance so that we can really get the hair nailed down.

atomic Thank you very much for your time.

**www.atomicmpc.com.au/
137_Darksiders2**

DiRT Showdown

Biff, bash, smash. Crunch, mash, crush. Say hello to DiRT Showdown and be excellent to each other in a freewheeling orgy of beautiful panel-bending chaos.

This game makes so much sense! Totally separate to the fairly safe bet that it'll shred the marketplace for this genre, it reeks of realised desire from Codemasters themselves. If they ever tell you in interviews that this is "the game they always wanted to make" – believe them.

It leverages the technology Codies has in its mature Ego engine, with the telling factor here being the quality of damage and deformation that it can handle with ease. There wasn't much space to abuse that feature in Codemaster's recent driving games like the F1 series and DiRT 3 – here they go bananas with twisted metal (which is also a top game, that).

Mostly, though, it smacks of pent up desire to let rip and break stuff in a frenzied orgy of thing-breaking. Not just *stuff*, but *rules*, man. There was a sniff of that in DiRT 3 with its various variations of 'tag' mode, but the rest of that game hemmed in the walls with its need to follow rally rules. The rigidity is worse in F1 and its immaculately tailored set of regulations.

DiRT Showdown chucks all that on a burning tire pile, with the developers dancing merrily around it singing "death to yo authoritah!"

Arcade or bust

It's wild, crazy, driving action fun. There's nothing remotely 'sim' about Showdown. Your choice of view is either 3rd-car view or bonnet cam. There's only the barest hint of 'physics' in the handling, and there's not even a manual gearbox option!

It's pure smash driving, shaped into a few flavours of paths of destruction. There's a Racing mode which you've seen before just a few times. The tracks are littered with obstacles to smash through, jump ramps to blast off, and if you're in single player mode, an army of enemy cars. A bit of praise to the devs here, because other games of this kind have trouble getting the AI balanced between pushing you into the wall too much and actually pushing for the finish line. It's pretty good with Showdown. You can biff'n'bash while still having a decent shot at winning.

I liked the Demolition Derby events best, mainly for the tricky location design. A very cool one is a Sumo Wrestling setup on a raised platform. Lining up bad guys just right so you t-bone them off the edge – without sailing off with them – is delightfully satisfying. Slapping physics in the face with a trout is the lovely way your car takes no damage at all if it rams another at full speed, yet imparts damage to the other car. It works the other way around, too, and is a cool mechanic for this mode, encouraging you to ram but not to *be* rammed.

Then there's the fantastically-named 'Hoonigan' events, which weren't deeply

atomic
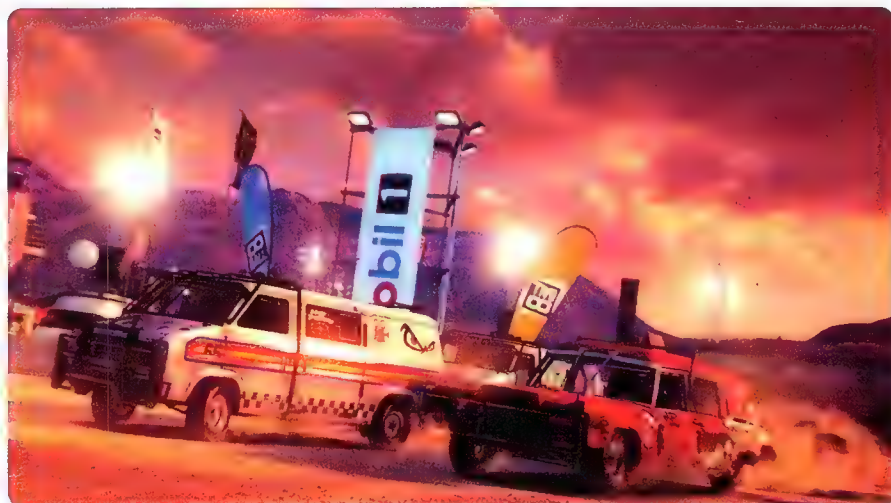
represented in the preview beta I played, sadly, because they look like a good bit. Hoonigan is all about freestyle free-roaming of areas designed to let you express your creative side via cunning stuntwork. It's a bit of DiRT 3's gymkhana, but with fewer witches' hats and many more jumps and stunts.

Made for mates

All this is tailored for multiplayer. It's with mates that Showdown shines and Codies has delivered more than just cars and environments here. The big happy news is that they have FINALLY ditched Games for Windows Live, in favour of Steam. This is not a good decision now – it was a good decision *years ago* – they've just finally done it.

In-game you see your Steam friends integrated into the game's graphic style. Who's online, easy messaging and best of all instant challenges are done so smoothly. You can issue a 'Showdown Challenge' and it matters

like, totally rad, and every moment of the game is doused in flaming cock rock or crushing disco, with a voice over dude that's just too California to be true. He'll bash your ears constantly with doodisms like "perpendicular awesomeness!", "what's their problem with doors?" and many, many "Whoooa!" calls.

The high intensity vibe is double-dosed with non-stop pyrotechnics and laser light shows, and if you slow down enough to look at the cheering crowdm, they're all Bill and Ted. If

any of those custom street car shows that are slowly taking over Foxtel. So: funny cars, 70's cop show cars, hot trucks and utes, Model-T hot rod derivatives and if you crave something with sharper handling there's modern rally cars and dirt buggies.

Unlike other games of the genre, the oversized and overweight yank muscle cars don't impose too much of a handling penalty, which is nice. That said it's quite clear this is a physics model optimised for control pads. I initially tested this with a wheel and it felt pretty yuck. Connecting a 360 controller and it all came good and felt right. Cars don't like turning without some serious throttle to accompany turns. The technique is to stand on the anchors and hit the gas while turning – exactly like Ridge Racer circa 15 years ago.

But any snobbish dismissal of Showdown is uncool. It's really good fun! It'll be a huge hit online with audiences spanning the kiddie crowd all the way through to boozy Friday night sessions with racers needing to get their reckless on. **BM**

Lining up bad guys just right so you t-bone them off the edge – without sailing off with them – is delightfully satisfying.

not if your friends aren't even online – when next they log in they'll see what you've done and reply in kind with a run at whatever track they're challenged at. It's a bit like turn-based destruction driving. It's neat, but of course the meat and potatoes are in a gathering of many in the live events.

A word of warning – stylistically, Showdown is

you've ever been to the Gold Coast Indycar weekend, it's like that.

Also predictable, but not necessarily bad, is the unlock-to-progress method. Do well, earn money, buy or upgrade vehicles and open up new tracks and events. Sigh.

The vehicles span a pretty cool range, and encompass the sort you'd expect to see on

Xbox 360, PS3 and PC (previewed on Xbox)

Developer Codemasters
Publisher Codemasters
Website http://www.codemasters.com/uk/
dirtshowdown/360/

✓ Arcadey and fun,
Steam integration

✗ Not particularly inventive

Anticipation rating
One for racing fans to look out for when it launches in May.

80%

PREVIEW

Sleeping Dogs

It's all action, all the time, in Square Enix and UFG's Hong Kong crime epic.

If you've ever had a chance to spend a few days in Hong Kong, and have gone for a wander around some of the less salubrious parts of town, there's a host of sensory detail you'll doubtless remember. There's the smell of small, crowded alleyways; the profusion of overhead wires and cables, enough to almost block out the low, grey sky; and, of course, there's the constant bustle and light of busy streets themselves. It's a testament to the team at United Front Games that, mere seconds into our first hands-on session with Sleeping Dogs, that these sensations came flooding back years after our last visit to the city.

Truly, we mean this with the highest praise in mind – you can practically smell the stale urine and old fish odour that you'll find in many older, grimier parts of the city.

But Sleeping Dogs is far more than a remarkable trigger for sense-memory. It's also a game that's taken a long and rather interesting route to get to market. It started as Activision's possibly misguided attempt to buy a new True Crime game; the game was already well into production when Acti bought into it. But it just never quite gelled as part of the franchise, and Activision let it go.

When publisher Square Enix got wind of the game, however, it saw the possibilities. It gathered up many of the original developers, lent the support of its own not inconsiderable talents, and now we have Sleeping Dogs in its current form – a bold homage to Hong Kong cinema, and a compelling open world action game.

Our time with the game was limited to about three distinct sequences from different parts of the game, and we got to experience a lot of the basic mechanics on offer, from foot chases and remarkably brutal hand-to-hand combat, to fast-paced gun-fights and slick races through rainy Hong Kong streets. But for all that the action is a lot of fun, what we've really come away with is a sense of just how deep the game's story may be.

Hardboiled

If you're a student of John Woo's classic Hong Kong cop films, you'll know the classic set-up of Sleeping Dogs. A young man returns to his roots, after spending time in the United States, and he sets about working his way back into, and up, the criminal food chain; but he's also a cop, working undercover with only a the barest of support networks. Think of the tense of moral drama of Infernal Affairs, combined with the high action of, well, Hardboiled or the Jackie Chan Police Story films, and you'll have a good handle on what Sleeping Dogs has to offer.

The story is supported by some great voice acting, and a game engine rich in detail, from the texture of a grimy, soiled undershirt, to the over-stretched skin of a pumped-up machete-wielding foe. We played our few levels on early Xbox code, but it's already looking very good. Given the game's getting a simultaneous PC release, it's going to be a real toss-up which version will be best to play. On the one hand, it's going to look great on PC; on the other, the fast-flowing combat will be best with a controller. If the PC version supports the Xbox controller, the choice will be even harder.

Martial arts combat is the game's focus,

and while it's not the only way to deal with enemies, it's certainly the most common. Sleeping Dogs relies on a fast-paced, directional combat mechanic not unlike Arkham Asylum's freeflow system. As you're often outnumbered (apparently, Triad-members outnumber cops four-to-one in reality), you'll need to pace combat carefully, especially when facing mixed groups of normal mooks and slightly tougher bosses.

As an added wrinkle, when you successfully grapple someone, parts of the environment will be highlighted as being particularly dangerous. For instance, you can hold an enemy, then jam them in a dumpster and slam the lid shut, or hold down their face over a band-saw. These instant take-downs are satisfying, but also leave you vulnerable to other opponents; plan your ultra-violence carefully.

Of course, the game wouldn't be complete without some gunplay. It's far from the focus, but the game uses a cover system, along with limited destructible cover, to convincingly recreate the kind of gun-fu action movie fans are familiar with. There's even a slow-motion ability available whenever you vault out of cover, allowing you to carefully target enemies and gun them down in a balletic display of ballistic

ability. It's not the best shooter you'll play, but as a palette cleanser from the all the punching and kicking, it does its job.

The final part of the game's triad of action is vehicular. There's a range of cars and motorbikes to zip around in, and combat is possible from all of them. Again, there's a simple slow-mo mechanic which not only looks great, as you shoot out tires and explode gas-tanks, but that also makes shooting while driving far easier than many similar titles. It actually doesn't feel like a huge chore, unlike, say, the driving and shooting in GTA or LA Noire. Even more impressively, you can leap from a motorcycle onto another vehicle; this actually called for in some missions, where you need to capture the driver of a particular car.

And it's super cool to boot.

God of Gamblers

There's a tonne of other stuff to like about the game. There's dynamic weather, a full day-night cycle, and the usual array of shops and side missions to explore. We're unsure if the main game is entirely linear yet, but you can approach the plot at your own pace, or go off on your own to find crimes to commit or stop, or races to win.

There's three separate XP tracks, too. Beating

folks down earns you Face, or respect, while criminal exploits and crime-fighting boost your Triad XP and Cop XP respectively.

However, the game is brutally violent; the source material's known for a level of gore, and the real-crime inspirations behind the game are no slouches when it comes to spilling blood, so it makes sense. However, it also runs the risk of putting the game on the wrong side of the MA15 rating. Not only does the game present a police officer committing all manner of criminal acts (in the name of a higher justice, of course) but there's also the environmental kills, like the aforementioned bandsaw fatality, to consider. And in one sequence, the main character is subjected to a brutal torture session, complete with hammered toes and an electric drill applied to his thigh. There's context for all of this, more or less, so it's up to local publisher Namco Bandai to present this to the Classification Board and do a good job of selling it.

We hope they pull it off. We really want to explore United Front's dark depiction of the Hong Kong underworld. **DH**

Wargame: European Escalation

It's the World War III that never was!

One of the great things about the Cold War, for a typical war-nerd at least, is that it promised so much. Sure, it's most definitely a good thing that tensions between East and West never boiled over into a real shooting war, but that doesn't stop us from wondering what real, modern war would have looked like. For most, that kind of wondering is limited to obscure tabletop wargames and re-reading Tom Clancy's Red Storm Rising, but now there's a third option for if you want to see what the Fulda Gap would look like after the flag goes up – Wargame: European Escalation.

Wargame is the product of Eugen Studios, and it uses the same IRISZOOM engine as previous title, RUSE. However, Wargame's a much simpler beastie, and is in many ways a classic example of complexity through simplicity.

The game features four campaigns with consistent unit XP, though the campaigns are really more a linear series of scenarios than real, open conflicts. The first, which also doubles as a stealthy tutorial, slowly introduces you to game's basic concepts, with greater access to more interesting units as each scenario progresses; you start out with just tanks and recon vehicles, but soon enough you'll be manoeuvring mechanized infantry, air units, and airborne troops all over the lovely German country-side.

Tutorials aside, though, the game has a serious learning curve, and we suspect the AI – which is stolid enough in its own way – is heavily limited in terms of units in can produce or start with. More often than not this leads to the necessity to approach your first effort with any scenario as a test-run, so you can learn what

you're facing, and then re-tune for your next effort. If we had to point out a single serious flaw, this would be it.

In control

As said, though, the basic mechanics are simple. You can order a unit to move, move fast, or to attack an opposing unit or area, and you start the game with a number of points you can use to order up reinforcements that you can immediately direct wherever you want on the battlefield; assuming they don't run into opposition along the way. Your points increase as you play, so you can call in more units to replace losses; but as your units persistently gain XP and level up, you don't want to treat

any skilled unit as expendable. There's no real base-building (you do have FOBs to control and capture), nor tech to research. The game's played in real time, but it's no RTS in the Starcraft sense; if anything, Wargame is one of those old paper wargames come to life!

There's a mess of detailed stats on the 361 units in the game (covering all the NATO and Warsaw Pact forces you could want), from armour values for all facings, weapons and communication abilities, and spotting range. It's very easy to lose yourself in this, but at the same time, you can just look at a unit and have a good enough idea of what it can do. In that respect, Wargame does a great job of making you feel like a real commander. Units under your

control will seek cover, react to fire, or even rout – morale is another important part of the game, so you really do feel like you're the one giving the orders.

As simple as moving units around is – and you get great pop-ups when you mouse-over terrain, too, so you know if you're about to send your armour into boggy ground – the challenge

force of, say, tanks backing it up, followed by infantry mounted in IFVs. This sounds like a flexible formation, but when you see a formation of attack helicopters pop up over a nearby forest, you'll wish for some close in flak support, or some choppers of your own. The early levels are a real exercise in combined arms tactics, as practiced by the semi-modern armies of the

of epic scale to be hand when you zoom out far enough that you can still see individual infantry or vehicles (rather than NATO unit markers), and take in all the fires, damage, and battles. It's a single, smooth scroll action, and the camera control is precise and simple. The game's interface is best described as utilitarian, though. We can see that it's trying to evoke the same feel as a piece of period hardware, and it gets the job done, but it could be better. The same goes for the music and much of the voice acting, which is either way too slavishly appropriate (my girlfriend asked me if I was playing an old game when the music kicked in), or just downright annoying.

> You can look at a unit and have a good enough idea of what it can do... Wargame does a great job of making you feel like a real commander.

is in combating enemy units with the right mix of troops, and being able to work out what you're facing ahead of any engagement. As the maps you fight on are often large, with multiple objectives and realistic European terrain with villages, roads, highways and rivers, this is harder than it sounds.

Planning ahead
Typically, you'll send a light scout vehicle ahead of your axis of advance, but with a fast reaction

seventies and eighties.

The IRISZOOM engine excels in this kind of wide-front warfare. You can zoom into the action, and see tanks roll over hills and through hedgelines, only to get ambushed by AT troops hidden in a nearby copse, or zoom all the way out for the bigger picture. The battlefield itself is highly interactive; tanks leave tracks over fields, craters pockmark the landscape after any engagement, and burnt out tanks can even set trees and grassland on fire. There's a real sense

But these are mere quibbles about what is a very enjoyable and challenging game. There's something about the scope and setting that, despite the deck being stacked against a live player (and there is a full MP suite of options once you've mastered the range of units, as well as AI skirmish modes), keeps us coming back to the game. Even if you're losing, the game can be spectacular – watching a mistimed chopper insertion of airborne troops go horribly wrong really gets your heart pumping. **DH**

PC

Developer Eugen Systems
Publisher Focus Home Interactive
Website http://wargame-ee.com

Gameplay
Easy to learn, but with hidden depths, and great realism.
88

Graphics
Amazing detail, and very versatile.
91

Sound
Good battle effects, meh music.
79

Overall
A compelling wargame for the serious Grognard.
89%

Naval Warfare: Arctic Circle

A valiant effort, and certainly a good buy, but still...

At the risk of sounding a touch nostalgic... man, Harpoon ? How good a game was that?!

There were numerous iterations of the popular game, all based on the tabletop war game of the same name, also developed in part with the help of Tom Clancy. It was a classic naval strategy sim, tracking numerous conflicts and campaigns in the cold Arctic waters between NATO and Warsaw Pact powers.

If you remember Harpoon as fondly as I, and many other wargamers, than Naval Warfare: Arctic Circle will be like an old friend. It's almost a direct companion to those classic games in terms of execution, and it's the product of a close collaboration between the developer, Turbo Tape Games, and the Royal Norwegian Navy. Published by Paradox Interactive, a great strategy publisher, it sounds like the game has got some solid wargaming roots.

Sadly, those roots seem set in shallow soil. Or should that be seas...

Full, er, reactors ahead!

Getting to full grips with NW:AC takes more than a few missions, and even after the limited tutorials you will more than likely come up against the steep curve of the many systems you'll have to master on all the various naval and air units you can control. The game's modern settings mean that even small units like destroyers are packed with offensive and defensive systems, from Phalanx guns to ship-killing Harpoon missiles, and active and passive sensors for staking out air, sea, and sub-surface targets.

Thankfully, the realism of the game extends to a real-life, one for one time flow. In effect, you could spend a day playing a single mission, as that's the kind of time-frame modern naval engagements take place it. This means when things get serious – like you discover a submarine and the two torpedoes it just launched at you, you'll have a relatively large amount of time to respond. Or, as the case may be, madly click through screens trying to find a handy piece of ASW equipment. You can also speed the game up, so that those hours waiting for a sonar sweep speed by.

Thankfully, the game's interface is pretty

clean, with easy to find windows and buttons for sensors, special actions, combat, and movement. There are two viewable windows – one large main window, and one smaller sub-window between the two main menu areas. By default, the top view is a top-down, 2D representation of the battle space, with the smaller one showing a 3D camera of selected units. However, if you rather pretty pictures over accurate intel, you can swap the two around.

Missions – and there are wide variety of them, in either two campaigns or standalone engagements – usually start slow. You'll have a mission briefing – say, interdict submarines in a
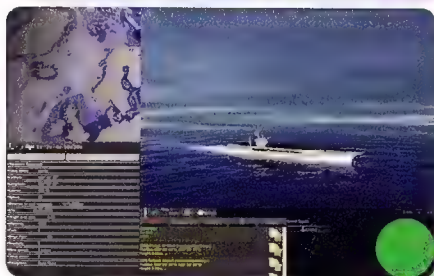
certain area – and then you get into the game. Your units will be in place, most likely a number of surface vessels like frigates or destroyers, and already moving through a given area. And then... it's all up to you. The tutorials give you the basics, but I'm very glad I have a background

Conquer, the finer points of sensor deployment and even choice of sensors and rate of fire might make the game seem more complex, and more challenging, than it really is. But one of the great things about the game's sense of accuracy is that it equates to modern naval strategy – if you can be seen, you can be killed, and the trick is to see the other guy first!

a lot of people having a fine time with the game, but there are just as many finding it woefully unready for release. Sadly, my experience is in the latter camp. Some missions seem bugged to the point of being impossible to complete, and Alt-Tabbing really messes up the map scrolling, plus some of the game's default settings are rather inappropriate, such as the rate of fire on things like anti-missile ordnance. One thing I'm not finding are any performance issues, but my rig's got more grunt than a wild boar. I can certainly believe that if you're around minimum specs, the game is probably challenging.

For someone more grounded in Command and Conquer, the finer points of sensor deployment and rate of fire may make the game seem complex.

in Harpoon. A veteran knows to not move too fast, and to be careful with using active sensors – otherwise you light yourself up like a beacon to those sneaky subs. A veteran also knows how best to use helicopter deployed sonobouys to lay a line of remote sensors along your vector; it's a game of cat and mouse, where the mouse can kill the cat with a single shot, and the cat's usually half blind.

But that's naval warfare for you. However, to someone more grounded in Command and

Lacking (shoe) polish

There's a huge range of in-service or soon to be commissioned units from a wide range of navies, though there is an understandable focus on Norwegian units in some missions. All these units look great in 3D mode, and when the Harpoons start slamming into your ships, the game looks pretty spectacular.

However, the game's indie background and pricetag – it's only $20 on Steam – show through in the apparent lack of quality control. There are

And, while the game's remarkably accurate, it seems to be missing that essential sense of being there that Harpoon had so nailed. You'd think the fantastic 3D views would be wonderful, but there always seems something missing. In Harpoon it was great to watch close in defences start to arc up at incoming missiles, and the game had great camera controls that always switched straight to the action, so you never missed an explosion or gunnery duel. Finding where the action is at can be real chore in Naval Warfare.

It's a shame, too, as the game promises so

PC

Developer	Turbo Tape Games
Publisher	Paradox Interactive
Website	www.paradoxplaza.com/games/

| Gameplay | 61 |
| Very accurate and detailed, but a little too flat and buggy. | |

| Graphics | 78 |
| Pretty solid for a sim. | |

| Sound | 72 |
| Basic at best. | |

Overall
Harpoon is still the superior naval experience.

64%

PREVIEW

Carrier Command: Gaea Mission

In 1988 a revolutionary concept met with instant affection and a legend was born. Today a new version is imminent.

Talk about stressful waiting games… the horror started back in 1988 when the original Carrier Command came out. It was so damn good that the wait began for what surely must be a sequel. That didn't happen! Then a decade and a half later, work on an independent tribute title was slowly creeping forward, the result of which still hasn't eventuated.

Then tensions spilled over when it was announced last year that Bohemia Interactive (the Arma guys) had the rights for a new CC game. Too much to worry about! Would it be amazing or would they fruck it up?

Well it's here and it's amazing! Stress=evaporated. Replaced with unbridled joy.

A 'paid beta'?

A public beta has been underway for a month and we've been hitting it hard. It demos the nuts and bolts, with full carrier operations and units. The final game will have over 30 islands and a full storyline campaign, as well as the sandbox play. For a small cost you get the beta and ongoing updates, then a full copy once it's released. Nice way to do it, Bohemia!

A group of islands is your playground. The idea is to take control of them all, in a staged campaign. You're free to attack any island, anywhere, as long as your carrier has enough fuel. Each island, once captured, can be converted to be either a Resources Island, which sends its goods to a Production Island, being your second choice, or the captured island can

be a Defence Island, brimming with automated guns, vehicles and signal jammers – but contributing nothing to your war machine.

A big sexy carrier is your tool. You drive it manually, or set waypoints for the AI to drive it. It has guns, which can also be manually fired, or will do their thing automatically if unattended. They're short range point defence only, though you can purchase missiles for effective land attack. There's also a lovely big laser weapon that's handy for hitting stuff on land, and the penultimate enemy carrier battle.

So it's a carrier sim?

It's a sim of the carrier, the units aboard it, and your production and resource network. Onboard the carrier, your control room is where you assign production for your island network, everything from spare ammo to replacement units and upgraded armour are controlled here, with production going on in the background across your island network. Choosing when to send the delivery barge on its way is a balance between 'must have stuff now!' and 'must wait til just one more fuel unit is built so I can sail to some important but too-far-away island.'

Combat is amazing. You can pilot the Mantas (flying) or Walruses (tanks), or let them go in independently via AI. Here it all gets fantastically complex and intense. Via a minimap you can play it as a RTS, and picture-in-picture shows unit vision as you play General. At any time you can jump in and take control of any

unit, which is handy at critical moments. Or do all the combat yourself, with posture orders for units in your squad.

But! There's only four of each unit, so attrition is something to be desperately avoided. Every unit is precious! You can get replacements, of course, but in the heat of battle there's little time for that.

Enemy islands, just like your own, are one of the three types. Resource and Production islands have few guns and unit bases, are somewhat of a pushover, but Defence are way tougher, and also have damned signal jammers that minimise your vehicle's range and must be taken out first.

Then there's the enemy carrier itself, which you generally won't ever see until the endgame, for a mother of a final face off.

It's fantastic! The tension, multiple levels of strategy that change in an instant, and the immersion all work like a finely balanced work of genius. Bohemia nailed it and with this unique genre comes a triumph that will reward players for many years. **BM**

PC

Developer	Bohemia Interactive
Publisher	Bohemia Interactive
Website	www.carriercommand.com

✓ Brilliant tactical choices, maintains the feel of the original

✗ Not quite finished, still needs polish

Anticipation rating

We're not waiting for September release to play this game.

95%

Risen 2: Dark Waters

It's a sprawling, more than a little piratical, RPG. But is it any good?

We're just not sure about Risen 2. There's no denying that its heart is most definitely in the right place: from the wonderfully large islands you get to explore, the range of skills and special talents to learn, and an overarching plot which takes more than a little bit of inspiration from the eldritch horrors of HP Lovecraft, there's a lot of great stuff in the game.

Risen 2 opens with a giant, tentacled Titan pulling a ship to pieces, so come on – fun stuff!

But there are three things which seem purpose-built to keep us from really enjoying the game, and in some ways it's a serious buzz-kill. First up, the game seems afraid of taking itself seriously, and secondly, the combat is just too click-heavy for this style of RPG. Finally, there's the game's rather glacial pacing when it comes to letting you actually progress your character, at least at the start. It's just... too... damn... slow.

Any colour you want

For an RPG, Risen 2 makes a surprising deviation from genre conventions right out of the gate, and it's a little like the popular quote from Henry Ford about his Model T. In Risen 2, you can have your character look like whatever you want; as long it's a long-haired, goateed male with an eyepatch and a drinking problem. It's not surprising, though – you're playing the same character from the first Risen.

This could be irritating, but upon reflection, pretty much every character we make (your own mileage may vary, and it'll likely very much annoy female gamers) looks like that anyway.

Our bearded lothario is an officer for the Inquisition, now, though soon enough he loses his fancy clothes and regular baths when he's sent off on a mission to discover a possible way to end the threat of the aforementioned Titans. The quest involves going undercover into a den of pirates, and from there... legends are made.

Or, at least, they would be, were not the main character a gigantic prat, with every NPC you meet sounding like they're about to crack up laughing at the crazy stuff he's saying. He was pretty annoying the first time around, and to be perfectly honest the character really kept us from getting into that game; he's more of the same this time round. The NPCs, on the other hand, seem to lack any real sense of gravitas in their voice delivery – this is a rare game that really would be better off with written dialogue.

Speaking of dialogue, NPC interactions certainly come with a lot of choice, but it's not nearly as elegant as other modern RPGs. Instead, you end up with a lot of repetition, and very rarely do you miss out on options, either, meaning you can just tick off each

conversational option as you go.

That is, assuming you can stand the NPC's voices without being annoyed.

Jungle drums

The setting of the game is certainly interesting, being a mix of fantasy tropes layered over a typical 18th century semi-historical setting. You've got black powder weapons of all kinds,

RPG standard, the wild boar, we were making something like fifteen to twenty clicks to knock anything down. Without any special moves at this stage, it was a tiring process, even with an NPC companion helping.

All the training is very expensive, so you really need to be focusing on singular skill groups or talents to get the most out of them. That said, good luck finding that cash in a hurry – there's

them. If we didn't know better we might think that developer Piranha doesn't want people actually enjoying the game...

However, the game looks fantastic, with lush jungle environments and highly vertical regions to explore, and a very atmospheric lighting engine. While the islands themselves are technically open, more often than not there are limited ways to get around, thanks to mountain ranges and other obstacles. In some cases, it's the wildlife that blocks you, as you simply won't be tough enough to best some enemies early in the game.

Risen 2 is very much a game we want to like, but it doesn't quite want to meet us half way. The setting is interesting, the addition of blackpowder weapons is awesome, and it has some great environments to explore. Certainly, as you progress, the sense of the game being more of a chore than actual entertainment disappears, but it's hard to push through. If you're looking for instant satisfaction, this may not be your thing, but if you want a game that's going to reward a certain stubborn persistence, Risen 2 might just be the perfect game for you. **DH**

> ## In early fights against ubiquitous RPG standard, the wild boar, we used fifteen to twenty clicks to knock anything down... it was a tiring process.

voodoo to learn, lots of sabres and rapiers for cutting and stabbing, and you can even toss around off-hand knives. Combat is enriched by a lot of special talents, like being able to kick opponents away, but to begin with, the game's fights are little more than repetitive click-fests. It does open up once you start learning some talents and developing your skills, but even this takes a while. For instance, in the early fights against things like monkeys and the ubiquitous

an early mission that requires you to purchase clothes before you can progress, and if you do that in the wrong order you'll be even further away from affording any meaningful upgrades. At least you can progress however you wish – the game is effectively classless, so if you want to become a pistol-packing voodoo practitioner, you can go nuts Haitian-style!

There's also the usual array of gathering and crafting skills, but, again, it's a grind to get into

Xbox, PC (reviewed on PC)

Developer Piranha Bytes
Publisher Deep Silver
Website http://risen2.deepsilver.com

Gameplay
Lots of character options and gear, but steep initial grind.
71

Graphics
Suitably lush, with some wonderful lighting.
88

Sound
Easily the weakest aspect of the game.
63

Overall
A game that rewards effort – assuming you're willing to make it.
69%

A piece of the Action (Quake)

In the immortal words of Kyle Kataarn...

Once upon a time, before there was even an Atomic magazine, I worked on PC Authority, for the company – AJB Publishing – that eventually started up the very mag you hold in your hands now. Back then, it was a one-magazine publishing house, but in those rosier days we had a rather crowded office. There must have been nearly twenty people working across various aspects of the mag, and if there was one thing that held more of us together than any other thing, it was Action Quake.

As morning stretched on into lunch, we'd all get a little antsy in anticipation of the fun to come. Old scores were always being settled, smack was always being talked. Lunch hour would hit, we'd scramble to get something easy to eat while gaming, and settle in for an hour's fun and gibbing. There was a particular ongoing grudge match between the editorial team and the sales guys – the latter were always known for their competitive streak, while us writers and editors... well, we'd been doing it a lot longer and would usually, with a handful of exceptions, end up on top.

A lot of us would even stay back after work to fit in some more Action time. This was serious business.

A lot of us would even stay back after work to fit in some more Action time.

I really started playing a LOT of games around this time period. It was when I was first starting to become a games writer, so I was getting access to more titles than ever before. But there are moments from our Action Quake sessions that remain as highlights of my gaming life even to this day. There was the intense firefight between me and one of our designers, which ended in him trying to trap me in a room with a grenade – only he mistimed and ended up closing the door on himself before dropping the gren. Oh, the cry of frustrated rage!

Then there were the numerous times someone got headshotted on the roof of one of the apartment-based maps. The sequence is hard to forget: gunfire, then the CRACK! of the loser's skull, and – if you were down in one of the alleys below – the gentle rain of blood. There'd usually be a collective 'Oooh...' from survivors.

Of course, there were rough edges to the game, but it was one of the first times gamers could play around with modern weaponry. Quake, Doom, and all the other SF or fantasy shooters of the period were great, but there's something eminently more relatable about using a Colt M4 or a healing yourself with a medpack rather than a glowing orb. Plus, it dialled into the whole action movie mindset – you could leap about, dual-wield pistols, and generally pretend you were John Maclean cleaning up Nakatomi Plaza, or Chow Yun Fat in any number of Hong Kong classics.

In terms of balance, it was razor-edged. Sure, you had guns like the aforementioned M4, which everyone knew was just about the last word in accuracy, range, and firepower, but it also came with the knowledge that once you opened up with it, you became enemy number one – and you could hear that thing clear across just about any map.

But as fun as the mod was, and as cleverly made, you need to look beyond it for its importance. It was guys from the A-Team (the makers of AQ2) who went on to make Action Half Life (which, thought it leveraged the Half Life engine wonderfully, was nevery quite as much fun as AQ2 before it) and Counter Strike, and after

that, the face of gaming was changed forever. Without that strong lineage, can you imagine the modern dominance of games like Call of Duty? No one was making modern shooters until the A-Team showed us how much fun you could have with two pistols and a Kevlar vest. And it goes without saying how the mod scene itself has grown to shape games development.

However, I've also got a more personal take on it all. From AQ2 there's a direct lineage to Counter Strike, and there's a very real possibility that without Counter Strike there would be no Atomic.

Back when Ben Mansill came up with the magazine, he was able to call upon a group of writers and tech enthusiasts who were drawn together not by being professional writers, but by being in a Counter Strike clan. Tim Dean – who was already a veteran on PC Authority – John Gillooly, Ashok Zaman, and Bennett Ring were all members of Total Consciousness, and all ended up working on Atomic or in the AJB offices. I was a member briefly, and I can safely say I learnt more about tactical FPSes in that brief period than I ever had before. But TC as a clan sprang from Tim's love of AQ2 and subsequent addiction to Counter Strike.

Sure, there were any number of writers who could have filled those initial slots on Atomic, but in all honesty, I can't think of any better ones. So I'd hate to think of a world without Action Quake 2 – it would be a very different one, and this magazine would likely itself not be what it is today.

AQ2 as one of the most important games of all time? For me... absolutely.

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